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APRIL, 1953

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Health, Education and Welfare

As intimated in the March issue of THIS JOURNAL, the final action of the Congress was in favor of President Eisenhower's Reorganization Plan No. 1 of 1953 which transformed the Federal Security Agency into a newly created Department, to be known as the Department of Health, Education, and Welfare, with cabinet rank for the head of the Department. President Eisenhower approved this legislation and Mrs. Oveta Culp Hobby was named as the first Secretary of the newly created Department, and was installed in that office on April 11.

Our front cover shows a portrait of the new Secretary. While the Department will undoubtedly have its own seal, and the various subdivisions will have their own insignia, health, education and welfare have long been depicted graphically by the insignia on our cover.

Mrs. Hobby is an experienced administrator, having been head of the Women's Army Corps (WAC) during World War II, and being the publisher of a newspaper in Houston, Texas. In her public appearances and before the Committees of Congress, she has made it clear that she is giving time and study to the intricacies of the various agencies which now come under her jurisdiction.

It is to be hoped that in addition to the indoctrination which she will receive from the heads of the agencies within her Department, with which the profession of pharmacy and the drug industry come into active contact continuously, she will also lend an ear to the professions and the industries which are affected by the administrative acts of those who head such units as the Food and Drug Administration, the Office of Education, the Public Health Service and others.

Health, education, and welfare have an unusually popular appeal. They affect the interests of the individual citizen to a greater extent than any other factors over which the Federal government exercises supervision. They are definitely the concern of state and local governments and they must continue to be the responsibility of local regulatory and administrative agencies. The role of the Federal Government in these matters should be one of benevolent cooperation and guidance where these are necessary when the problems involved transcend state borders.

In the regulation of commerce in foods and drugs, for example, it is the function of the Federal Government to exercise interstate supervision without encroaching upon or destroying the responsibility of the states for what goes on within their own borders. The health professions are regulated under the police power of the states and that power should not be usurped by a Federal agency.

We have every reason to believe that Mrs. Hobby will encourage and not interfere with researches in the development of protective mechanisms against disease, dangers in the misuse of drugs, and fraud such as lies inherent in the adulteration or misbranding of foods and drugs. We have reason also to hope that she will guard against arbitrary rulings and assumption of authority over established professional practices.

We congratulate Mrs. Hobby on the great opportunity which the President has extended to her for outstanding public service, and offer her the co-operation of the AMERICAN PHARMACEUTICAL ASSOCIATION in the development of policies and the execution of

regulatory procedures essential to the discharge of the duties of her office.

Whose Blood?

HUMAN blood has become an important agent for the preservation of life and the prevention of serious illness in others than the original possessor. Millions of our citizens have become blood donors. Most of them have contributed their blood on a voluntary basis through the American Red Cross and some have made their blood available on a commercial basis.

The most familiar picture of blood donations is that of the voluntary supply to save the lives of our fighting men in Korea and elsewhere, and for transfusion in case of serious illnesses and shock among the civilian population.

Less glamorous perhaps has been the supply of blood and blood products, especially immune serum globulin, for the prevention and treatment of measles, infectious hepatitis, and now for the prevention of poliomyelitis.

The regulation of the distribution of drug products from ordinary sources is difficult enough. The use of human blood and its products presents some extraordinary problems.

The American Red Cross has handled the procurement and distribution of human blood in a highly acceptable manner but its handling has not been without serious problems and conflict of interests. As long as the blood which can be spared by one human being is a means of saving the life of another, especially one who has risked his life in the defense of the things Americans hold dear, or the victim of a catastrophe, it will be given cheerfully. When, however, there is doubt as to the advisability of the use of human blood or its products, those who give blood have a right to be assured that controversies will be resolved on a thoroughly scientific and equitable basis before more sacrifices are called for.

The commercial production of blood products, such as immune serum globulin, from human blood has reached proportions of some magnitude and it has been a great comfort to know that such products have been standardized by inclusion in the United States Pharmacopeia, and that responsible manufacturers have established ways and means of furnishing a continuous supply to meet the demand for the normal incidence of measles and hepatitis.

Neither of these ailments strike the popular imagination to the extent that poliomyelitis does. When it was announced publicly that gamma globulin can be used for immunization, especially against the paralytic type of polio, the popular demand to make it available for the annually recurring epidemics of this dread malady was bound to receive great public attention. It was, therefore, quite natural for the National Foundation for Infantile Paralysis to take a drastic step in preparing for an adequate supply of gamma globulin to meet the anticipated public demand at the season when these cases are expected to appear.

The diversion of the voluntary supply of gamma globulin for poliomyelitis was a problem to be settled between the American Red Cross and the Foundation. The commercial supply presented other problems, but these have been solved, at least for the present, through the purchase by the Foundation of the complete supply and future production of gamma globulin from the manufacturers engaged in the commercial supply of human blood products.

It now became somebody's business to see that there would be enough immune serum globulin available for routine use in connection with measles and hepatitis, and as much as possible for the anticipated outbreaks of poliomyelitis.

Certainly, this was not a problem to be solved on a commercial basis. It was one of those recurring problems involving the distribution of prophylactic and therapeutic agents when (1) the supply is inadequate; (2) the use of the product routinely in all cases may be wasteful; and (3) a choice has to be made with regard to the relative seriousness of the diseases for which the product is used.

It was, therefore, quite logical for the Office of Defense Mobilization's Health Resources Advisory Committee to be called upon to devise a procedure for allotment and distribution of gamma globulin. This committee, in turn, called on the National Research Council to aid in the determination of the use and allocation of the scarce product and it called upon the Public Health Service, through its Division of Civilian Health Requirements to distribute the product to state and territorial health officers.

(Continued on page 253)

THE PHARMACIST....

By R. H. FELIX, M.D.*

BECAUSE he is a professional person whose advice and assistance are sought by large numbers of people daily, and because he is one of the leading members of the business community, the pharmacist often plays a large part in civic affairs. He is more than a private citizen—he is a key citizen and, as such, must stand ready to be consulted on matters of public interest.

The need for developing wide public awareness of mental health is something the average pharmacist may not have considered part of his personal responsibilities. However, the problem of mental illness is a reality which touches many citizens in many ways. In 1947, in New York State alone, more than 9,000 male patients were recorded as first admissions to mental hospitals. Supposing each of these men had been capable of earning only $1,000 a year, the loss in annual potential earning power would have been $9,000,000. No figures on loss in annual potential earning power over the entire country for 1952 are available. In addition, mental illness is costing the United States over a billion dollars a year in tax funds, according to National Association for Mental Health estimates. And lost manpower and rising tax costs are everybody's business.

The cost picture is grim. Half a billion tax dollars each year go into maintenance of the state mental hospitals to which the great majority of the hospitalized mentally ill must look for help. (Private hospitals have very limited patient-capacity and are extremely expensive.) "Maintenance" means the actual running of the hospital: care and feeding of patients and salaries for staff doctors, nurses, and hospital attendants. It does *not* include new construction or repair, purchase of new equipment, or the addition of extra space to meet the ubiquitous conditions of overcrowding. But the prospects of future cost reduction can be brightened if we are willing to make the effort now. We must provide the necessary personnel and we must increase research, to provide us with the tools which can cure and prevent mental illness. Too few of our state mental hospitals are staffed and equipped to give patients the modern, scientific treatment which would enable a large proportion of them to return to normal living. Roughly, to meet present needs, the total number of physicians must be more than doubled. The number of registered nurses is less than a quarter of what it should be. We need 30 per cent more clinical psychologists than are now available and four times the number of psychiatric social workers. Present research has forcefully demonstrated that with intensive treatment, many hospital patients can be discharged within a year or less of the date of their first admission. But when treatment is inadequate, the patient's stay lengthens, the need for readmission is more frequent, and chances for the development of chronic mental illness increase.

Not long ago a news magazine reported the case of an old lady celebrating the 50th anniversary of her admission to the mental hospital in which she was still a patient. The illness from which she suffered is not considered "incurable," but she had received custodial care with only occasional, minimal treatment. Now she is too old to be helped—she must remain in the hospital until she dies, a ward of the state, supported by public money. At another state hospital, however, a patient hospitalized and having only custodial care for 17 years, responded so well that he was able to be discharged after only

* Director, National Institute of Mental Health, National Institutes of Health, Public Health Service, U. S. Department of Health, Education, and Welfare.

A KEY CITIZEN IN MENTAL HEALTH

Dr. Felix continues his series on the pharmacist as a member of the mental health team with an appraisal of the financial and emotional seriousness of the problem. His first paper appeared in the March issue, and pointed out some of the areas in which the pharmacist can render the greatest service.

three months of intensive treatments.

And this is only one avenue of research. It has been estimated that if doctors could find a cure for schizophrenia, half of the patients now in mental hospitals could be returned to their homes, their jobs, and their communities. New methods, new medications, new techniques—all these things are needed but we cannot hope to obtain them except through research. And research is dependent on public support. Here again the pharmacist is in the forefront of the civic-minded whose daily contacts offer them continuous opportunities to inform themselves and to speak with authority on matters of public importance.

But we cannot hope to keep pace with the demand for facilities and personnel to cope with the rising tide of mental illness unless we also develop more effective measures for its prevention. Trained personnel in clinics, counseling organizations and social agencies are already at work in the field of mental health. But if the community does not have such facilities, local citizens can work through local civic organizations in an effort to obtain them.

Voluntary mental health associations have sprung up all over the country. Focal point of these is the National Association for Mental Health which works with professional associations in the psychiatric field, disseminating information, sponsoring research and supporting mental health programs throughout the United States. This organization also sponsors National Mental Health Week, which will be observed this year from May 3 through May 9, to focus attention on the problems of mental illness and inform the public of ways in which it can participate to speed the solution of these problems.

State and local mental health groups are aiding communities by surveying their problems and helping plan facilities to take care of the special needs of small towns and large cities alike. Their purpose is to publicize, sponsor, and promote research, training, services and prevention in the field of mental illness. They plan and carry

(Continued on page 256)

In the first article in this series, Dr. Felix pointed out why the pharmacist is a vital member of the mental health team.

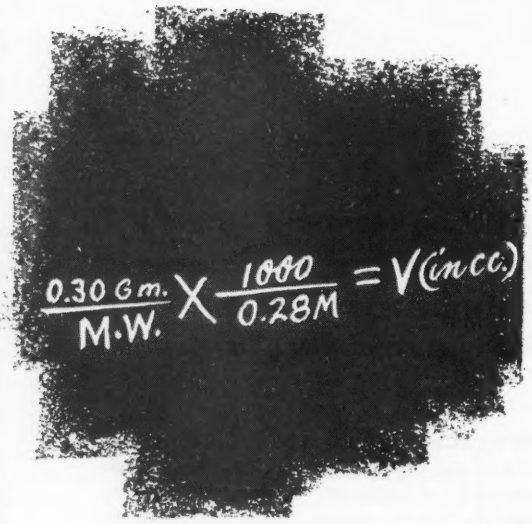
He is readily accessible.

He has wide personal contact with the public.

In helping people with mental or emotional problems, the pharmacist should hear the person out, since talking about the problem is the first step toward eventual solution.

The pharmacist should be aware of all facilities in the community for the treatment of mental health conditions.

The pharmacist should not become too involved, but refer the person to either physician or minister who can supply the next step in the chain of events leading to better mental health.



an equation

FOR USE WITH THE SIMPLIFIED METHOD OF PREPARING ISOTONIC SOLUTION

by Joseph B. Sprowls†

In answer to many requests, Dean Sprowls presents an equation which can be used in calculating the volume of isotonic solution which can be prepared from 0.3 Gm. of any drug. Previously this "V value" was published for only more commonly used drugs.

IN A previous paper (1) a simplified method was presented for determining the amount of water to use in preparing isotonic solutions by the addition of drugs to isotonic diluting solutions. A table was published in that paper which presented the volume (V) of isotonic solution which can be prepared from 0.3 Gm. of various commonly used drugs. The quantity 0.3 Gm. was selected because it is the amount used in preparing 30 cc. (one fluidounce) of a one per cent solution.

The method has found a rather wide usage and has been republished in a number of publications (2, 3, 4, 5). It is anticipated that additions to the table will be published from time to time; however, it is presumed that some prescriptions may be encountered calling for drugs for which no values have been published other than the chemical formula or molecular weight. Requests have been received by the author for a method which can be used in calculating the values for drugs which have not yet been listed. For this reason it seems desirable to present an equation which can be used in calculating the value of V for any drug.

Recent evidence presented by Krogh *et al.* (6) and confirmed by Hind and Goyan (7) and Schaeffer (8) has indicated that the osmotic pressure of tears corresponds to that of blood serum. The freezing point of blood serum has been variously reported as varying between $-0.52°$C. and $-0.56°$C. Lund, Nielsen, and Pedersen-Bjergaard (9) have shown that $-0.52°$C. is probably the most accurate figure, and this agrees well with the freezing point of a 0.9 per cent solution of sodium chloride when corrected for disengaged ice. This freezing point corresponds to a non-electrolyte concentration of approximately 0.28 molar.

Presented before the Section on Practical Pharmacy, A.PH.A. Convention, Philadelphia, Pa., August, 1952.

† Dean, Temple University School of Pharmacy, Philadelphia, Pa.

As has been stated the table which was presented in the previous article lists the volume in cc. of isotonic solution which can be prepared using 0.3 Gm. of a drug. In order to prepare an isotonic solution, this drug must be dissolved in a volume of solution such that the osmotic properties of the solution will correspond to 0.28 *M* of a non-electrolyte. An equation to determine this volume (*V*) may be set up as follows for a non-electrolyte of molecular weight M.W.

$$\frac{0.30 \text{ Gm.}}{\text{M.W.}} \times \frac{1000}{0.28\ M} = V \text{ (in cc.)}$$

Realizing that extreme accuracy is neither possible nor necessary in solutions of this type, the equation may be reduced to the following approximate form

$$V = \frac{1100}{\text{M.W.}}$$

In the event the drug to be dissolved is a substance which ionizes, a value greater than 1100 must be used in the equation given above. For this reason it is convenient to rewrite the equation in a general form as follows:

$$V = \frac{\text{I}}{\text{M.W.}}$$

The following values for I are based upon data as submitted by Goyan, Enright, and Wells (10) and are approximately proportional to the *L* values as submitted by those authors.[a]

	I
For non-electrolytes, weak electrolytes, and di-divalent electrolytes, as $ZnSO_4$	1100
For uni-univalent electrolytes, as NaCl	1900
For uni-divalent electrolytes, as atropine sulfate $(C_{17}H_{23}NO_3H)_2SO_4$	2400
For di-univalent electrolytes, as $CaCl_2$	2700
For uni-trivalent electrolytes, as sodium citrate, $Na_3C_6H_5O_7$	2900
For tri-univalent electrolytes, as aluminum chloride, $AlCl_3$	3400

The following examples will demonstrate the use of the equation in calculating values for new drugs.

(1) Furtrethonium Iodide (Furmethide, S.K.F.) is a cholinergic drug which has seen some use in ophthalmia because of its miotic value. The drug has the formula $C_8H_{14}INO$ and a molecular weight of 267.12 and ionizes as a univalent electrolyte. For this type of electrolyte I has a value of 1900. Thus, the value of *V* may be calculated as follows:

$$V = \frac{1900}{267.12} = 7.1 \text{ (approx.)}$$

This calculation reveals that 7.1 cc. of isotonic solution may be prepared from 0.3 Gm. of the drug.

(2) Antistine hydrochloride is an antihistamine drug which is frequently employed in ophthalmic medication. The value for *V* has not been previously reported. It has a chemical formula $C_{17}H_{19}N_3HCl$ and a molecular weight of 301.81. Since it ionizes as a uni-univalent electrolyte, the value 1900 must be used for I. The equation becomes

$$V = \frac{1900}{301.81} = 6.2 \text{ cc. (approx.)}$$

The value of *V*, therefore, is 6.2 cc.

(3) Ephedrine hydrochloride has a molecular weight of 201.70 and ionizes as a uni-univalent electrolyte.

$$V = \frac{1900}{201.70} = 9.4 \text{ cc. (approx.)}$$

Note: This example was given for comparative purposes. In the previous publication where the value for this salt was calculated on the basis of experimental data, *V* has an equivalent of 9.3 cc.

(4) Amphetamine sulfate has a molecular weight of 368.49 and ionizes as a uni-divalent electrolyte.

$$V = \frac{2400}{368.49} = 6.5 \text{ cc. (approx.)}$$

Also presented for comparison. The published value for this salt is 6.7 cc. Such discrepancies are to be expected in a method which is based upon so many generalities.

[a] I values may be calculated from the data of Goyan, Enright, and Wells as follows: I = 567L.

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THE CELLULOSE ETHERS AND THE POLYETHYLENE GLYCOL STEARATES AS SUSPENDING AGENTS

by Marybeth Hartman Jaggard† and Louis C. Zopf‡

RECENTLY synthetic products have become available which are replacing tragacanth and acacia. The physical properties of these synthetic products can be controlled whereas the physical properties of gums may vary with each shipment. At the time of this investigation very little had been published (1, 2, 3, 4, 5) on the use of these synthetic suspending agents. A generalized study covering the many synthetic suspending agents and their pharmaceutical application has not yet appeared in the literature. Such a study is desirable if the pharmacist is to utilize these efficient and superior aids in prescription compounding.

The purpose of this study was to determine the effects of certain of the newer synthetic suspending agents on a typical hydrophobic powder and a typical hydrophilic powder. Insoluble powders have been classified (6) as being either water-repellent (hydrophobic) or readily water-miscible (hydrophilic). Zinc oxide and sulfur, two of the most commonly used insoluble ingredients of lotions, were selected as examples for this study. As would be expected from the previous classification the hydrophobic sulfur is much more difficult to suspend than the hydrophilic zinc oxide. The specimens were prepared in amounts of 60 cc. each and observed to determine the most efficacious suspending agent for a 10 per cent concentration of each powder, the concentration of suspending agent necessary for a satisfactory suspension, and the effects of the use of aqueous and hydro-alcoholic media on the individual suspending agents.

Presented before the Section on Practical Pharmacy, A.PH.A. Convention, Atlantic City, N. J., April, 1950.

† Former Student, State University of Iowa, College of Pharmacy, Iowa City, Iowa.

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Experimental

The suspending power of the agents under consideration was determined in aqueous media since water is the most commonly employed vehicle for lotions. On occasion dilute alcohol or an ingredient containing alcohol may be prescribed, thus it would be advantageous to know the properties of these suspending agents in a hydro-alcoholic media. This prompted the study of the suspending properties of these agents in 50 per cent alcohol.

The amount of suspension obtained when 10 per cent zinc oxide and 10 per cent sulfur are mixed with water was determined and used as a standard of comparison to evaluate the effectiveness of the suspending agent being studied. As a further standard for determining the advantages of the synthetic agents over the natural gums 1.5 per cent tragacanth was used to suspend 10 per cent zinc oxide and 10 per cent sulfur in aqueous and in hydro-alcoholic media.

The following suspending agents are included in this study:

1. Tragacanth—the gum control
2. Methyl Cellulose 400 or MC 400 (Dow Chemical Company)
3. Methyl Cellulose 4000 or MC 4000 (Dow Chemical Company)
4. Sodium Carboxymethyl Cellulose medium viscosity or CMC med (Hercules Powder Company)
5. Sodium Carboxymethyl Cellulose high viscosity or CMC hi (Hercules Powder Company)
6. Hydroxyethyl Cellulose medium viscosity or HEC med (Carbide and Carbon)[a]
7. Hydroxyethyl Cellulose medium high viscosity or HEC med hi (Carbide and Carbon)[a]

TABLE I.—PERCENTAGE OF SUSPENSION OBTAINED IN THE AQUEOUS PREPARATION OF 10 PER CENT SULFUR

Suspending Agent	Concentration	Time Interval				
		½ hr.	2 Hrs.	1 Day	2 Days	7 Days
Water (control)	....	34(14)[a]	34(14)[a]	30(14)[a]	26(14)[a]	26(14)[a]
Tragacanth	1.5	100	100	100	98	96
CMC hi	0.5	100	100	100	98	98
PEG 400 MS	2.0	73	71	70	70	70

[a] Percentage of sulfur flotation.
Note: MC 400, MC 4000, CMC med, HEC med, HEC med hi, CW 1540 DS, CW 1000 MS, PEG 600 DS, PEG 400 DS, and PEG 300 MS gave less than 70 per cent suspension in 24 hours and therefore were omitted from this abstract.

TABLE II. PERCENTAGE OF SUSPENSION OBTAINED IN THE HYDRO-ALCOHOLIC PREPARATION OF 10 PER CENT SULFUR

Suspending Agent	Concentration	Time Interval				
		½ hr.	2 hrs.	1 Day	2 Days	7 Days
Tragacanth	1.5[a]	100	100	100	100	100
CMC med	1.0	100	100	100	100	100
CMC hi	0.5	100	100	100	100	100
HEC med	2.5	98	97	97	97	97
HEC med hi	2.5	98	96	96	96	96

[a] 25 per cent alcohol used to prepare this suspension.
Note: MC 400, MC 4000, CW 1540 DS, and CW 1000 MS gave less than 70 per cent suspension in 24 hours and therefore were omitted from this abstract.

TABLE III.—PERCENTAGE OF SUSPENSION OBTAINED IN THE AQUEOUS PREPARATION OF 10 PER CENT ZINC OXIDE

Suspending Agent	Concentration	Time Interval				
		½ Hr.	2 Hrs.	1 Day	2 Days	7 Days
Water (control)	....	93	71	63	62	61
Tragacanth	1.5	100	100	100	98	90
MC 400	1.0	100	100	92	84	64
CMC med	1.0	100	100	98	24 (cloud to 96)	21 (cloud to 88)
CMC hi	0.5	100	100	96 (cloud to 100)	96 (cloud to 100)	79 (cloud to 95)
HEC med hi	5.0	100	100	99	95	80
PEG 400 DS	2.0	100	99	99	99	99
PEG 400 MS	2.0	100	100	100	100	100
PEG 300 MS	1.0	100	98	81	75	68

Note: MC 400, HEC med, CW 1540 DS, CW 1000 MS, and PEG 600 DS gave less than 70 per cent suspension in 24 hours and therefore were omitted from this abstract.

TABLE IV.—PERCENTAGE OF SUSPENSION OBTAINED IN THE HYDRO-ALCOHOLIC PREPARATION OF 10 PER CENT ZINC OXIDE

Suspending Agent	Concentration	Time Interval				
		½ Hr.	2 Hrs.	1 Day	2 Days	7 Days
Tragacanth	1.5[a]	100	100	100	100	100
MC 400	1.0	100	100	100	100	97
MC 4000	1.0	100	100	100	100	100
CMC med	1.0	100	100	100	100	100
CMC hi	0.5	100	100	100	92 (cloud to 100)	81 (cloud to 100)
HEC med	2.5	100	100	100	100	100
HEC med hi	2.5	100	100	100	100	100

[a] 25 per cent alcohol used to prepare this suspension.
Note: CW 1540 DS and CW 1000 MS gave less than 70 per cent suspension in 24 hours and therefore were omitted from this abstract.

8. Carbowax 1540 Distearate or CW 1540 DS (Carbide and Carbon)[b]
9. Carbowax 1000 Monostearate or CW 1000 MS (Carbide and Carbon)[b]
10. Polyethylene Glycol 600 Distearate or PEG 600 DS (Carbide and Carbon)[b]

(Continued on next page)

Cellulose Ethers

• • • • • • • • *from preceding page*

11. Polyethylene Glycol 400 Distearate or PEG 400 DS (Kessler Corporation)[b]
12. Polyethylene Glycol 400 Monostearate or PEG 400 MS (Riverdale Chemical Corporation)[b]
13. Polyethylene Glycol 300 Monostearate or PEG 300 MS (Kessler Corporation)[b]

Ethyl cellulose was not included in this study because the samples which we had were only soluble in 95 per cent alcohol.

Method of Preparing Suspensions

Preliminary Preparation:

Tragacanth Suspensions:

1. Mix powder and tragacanth thoroughly.
2. Add vehicle in small portions with thorough trituration after each addition until all the vehicle is added.

All other suspensions:

1. Dissolve or disperse suspending agent in vehicle.[c]
2. Triturate powder with a small portion of the solution or dispersion of the suspending agent.
3. Add remainder of suspending agent solution or dispersion gradually, with thorough trituration after each addition.

Final Preparation:

The suspensions were prepared in amounts of 60 cc. each in a mortar. After preparing as outlined above, each suspension was stirred with a Mixmaster-type electric mixer which had special stirring shafts for five minutes, removed from the mixer, and immediately placed in a 50-cc. graduated cylinder for observation at intervals of $^1/_2$, 2, 24, and 48 hours, and at the end of seven days. Only 50 cc. of suspension were used for observation because the degree of settling could be read in percentage; the remaining 10 cc. were discarded. Due to the technical limitations of time and space seven days was chosen as the maximum period of observation of the suspensions. Also it is felt that one week represents the clinical usefulness of such suspensions when prescribed by a physician. The degree of settling was observed at the specified time intervals and the percentage of suspension calculated for each preparation and recorded in Tables I–IV.

Notes:

Tragacanth will not swell in 50 per cent alcohol, therefore it was necessary to reduce the alcoholic content to 25 per cent when testing the suspending power of this agent in hydro-alcoholic media.

In all cases the per cent of suspending agent used was the amount giving the most efficacious action in each media. Higher concentrations gave a preparation of ointment-like consistency.

In the aqueous sulfur suspensions ester precipitation was noted in 2 hours with the CW 1540 DS and in 24 hours with the CW 1000 MS. A similar precipitation was noted in the hydro-alcoholic sulfur suspensions employing these same esters in 48 hours. Precipitation may have occurred in the zinc oxide suspensions but none was observed because both the zinc oxide and the esters are white.

PEG 400 DS is difficult to keep in dispersion, therefore the suspensions were prepared with the warm dispersion to avoid the precipitation noted on cooling to room temperature.

PEG 600 DS, PEG 400 DS, PEG 400 MS, and PEG 300 MS are soluble in alcohol and cannot be used as suspending agents with hydro-alcoholic vehicles.

The presence of entrapped air in the sulfur suspensions made it difficult to evaluate the efficiency of the suspending agents under observation. Two methods were employed in an effort to overcome this undesirable property of sulfur:

1. The following surface-active agents were used to "wet" the sulfur particles: Sodium lauryl sulfate 1 per cent, Polysorbate 80[d] 5 per cent, and Benzalkonium Chloride 1:1000.[e] These agents eliminated surface flotation of sulfur in the aqueous sulfur suspension and they also reduced the percentage of suspension.

2. The sulfur and polyethylene glycol ester suspensions were difficult to prepare without incorporating air. To overcome this difficulty the sulfur was first triturated with various levigating agents—propylene glycol, polyethylene glycol

(*Continued on page 244*)

[a] 6 has a viscosity of 100 centipoises in 5 per cent solution and 7 has a viscosity of 500 centipoises in 5 per cent solution. They are laboratory prepared samples and are not available commercially, however higher viscosity products are being produced and their relative merits can be judged by comparison with the results noted in this paper.

[b] 8–13 were specially prepared samples for use in our laboratories and their efficiency may differ somewhat from commercially available preparations. However, with the establishment of standards in U.S.P. XIV it is expected that uniform products can be consistently produced. The results presented here can be used as a guide in evaluating the properties of a specific glycol stearate which the individual pharmacist is using.

[c] The accepted techniques for dissolving or dispersing each agent were employed: i.e., methyl cellulose solutions.

[d] Tween 80, Atlas Powder Company.

[e] Zephiran Chloride, Winthrop Chemical Company.

EARLY AMERICAN PHARMACIES

The Restoration of Historical Pharmacies

BY GEORGE B. GRIFFENHAGEN*

I. THE HUGH MERCER APOTHECARY SHOP

Address: 1022 Caroline Street, Fredericksburg, Virginia

Hours Open: Monday through Saturday: 9.00 A.M. to 5.00 P.M. Sunday: 1.00 P.M. to 5.00 P.M.

Admission: 30 cents

Floor Space: 648 square feet occupied by the apothecary shop room in a one and a half story Colonial frame building.

Owner: American Pharmaceutical Association through the Friends of Historical Pharmacy, Inc.

History: The apothecary shop end of the building was erected in 1746 and was opened as an apothecary shop in 1761 by General Hugh Mercer, a Scottish-born American physician who fought and died in the American Revolutionary War. George Washington, a personal friend of Mercer, used one of the rooms of the shop as his office on his frequent visits to Fredericksburg. The restoration, one of the outstanding shrines of historic Fredericksburg, was first opened for exhibition by the American Pharmaceutical Association through the Friends of Historical Pharmacy in 1941.

Description: The apothecary shop is restored in the period of Mercer (1761–1777) with a fireplace, antique fixtures, and an extensive collection of bottles, jars, mortars and other pharmaceutical specimens. Several prescriptions in the handwriting of Mercer as well as original records kept by George Washington are also preserved and on exhibition.

Selected References: Waterman, J. M., *With Sword and Lancet* (a biography of General Hugh Mercer), Garrett and Massie, Richmond, Va., 1941, 177 pp.

J. Am. Pharm. Assoc., *Pract. Pharm. Ed.*, **2:** 61 (1941).

Travel, **91:** 22 (1948).

Hygeia, **26:** 478 (1948) (photograph of shop erroneously, Stabler-Leadbetter Shop, Alexandria, Va.).

* Associate Curator, Division of Medicine and Public Health, Smithsonian Institution, Washington, D.C. and Consultant to the A.PH.A. Museum. The first of a series of monographs describing apothecary shop restorations on exhibition in the United States.

BY WILLIAM J. HUSA | AND JAMES M. PLAXCO, JR.

THE PREPARATION AND INCOMPATIBILITIES OF Tragacanth Mucilage

The jelling of tragacanth mucilage and bismuth subnitrate have long been a problem for the practicing pharmacist. Here the authors review past work in the subject and present further data gained through their own study.

TRAGACANTH has long been used as a suspending agent for insoluble substances. When it is used to suspend bismuth subnitrate, a jelly-like mass forms and soon hardens so that it cannot be removed from the bottle. In 1948 Schmitz and Hill (1) reported that this incompatibility could be controlled by the addition of sodium acid phosphate or trisodium phosphate. The present paper gives a comparison of several methods for preparing tragacanth mucilage and offers further data on controlling the jelling of tragacanth mucilage and bismuth subnitrate.

Experimental

Materials Used —— The gums used in the work were purchased from two reputable distributors. All the gums were of U.S.P. grade, but the quality varied with the price. The chemicals used were of U.S.P. quality.

General Methods —— The viscosity determinations were made by the falling ball method as recommended by Middleton (2).

The suspending power determinations were made by suspending an insoluble agent in the tragacanth mucilage and placing the suspension in a 2-oz. prescription bottle, 7 cm. in depth. After standing for the prescribed time, the amount of settling was determined by measuring the depth of clear supernatant liquid.

The pH determinations were made with a Beckman pH Meter, Model H 2.

Preparation of Tragacanth Mucilage—— Tragacanth mucilage, U.S.P., is 6 per cent in strength and much too thick to be used as a suspending agent. A search was instituted to find suitable methods for preparing 1 per cent tragacanth mucilage as this is the strength most often used as a suspending agent.

Since the U.S.P. recognizes both ribbon and powdered gum and does not specify which is to be used in the preparation of the mucilage, both types of gum were tried to determine which made the better mucilage. Also, differ-

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Presented to the Section on Practical Pharmacy, A.PH.A., Atlantic City meeting, May, 1950. This paper is based on a thesis presented to the Graduate Council of the University of Florida by James M. Plaxco, Jr., in partial fulfillment of the requirements for the degree of Master of Science in Pharmacy.

† Head, Department of Pharmacy, University of Florida, Gainesville, Fla.

ent methods of preparation were used to determine which was easiest and which gave the best mucilage as regards viscosity and suspending power.

The U.S.P. (3) formula for Tragacanth Mucilage was employed except that the proportion of tragacanth was reduced from 6 to 1 per cent.

Using ribbon gum, it was found that the U.S.P. method of preparation gave best results but a maceration period of 24 hours is required. Powdered gum should not be used with this method as it cakes and lumps.

Since the pharmacist often needs to prepare extemporaneously a tragacanth mucilage to be used as a suspending agent, a rapid method was sought. It was found that powdered gum should be used to prepare a mucilage quickly even though the heat generated in powdering the gum slightly impairs the viscosity and suspending power (4). In order to obtain a uniform mucilage, it was found that it was necessary to use some agent, in which the gum is insoluble and which is miscible with water, to wet the gum before adding the water. Both alcohol and glycerin were found suitable for this purpose. Alcohol was easier to use and gave a slightly better mucilage.

Mortar and Pestle Method—for Quantities Up to 250 Gm. —— The powdered gum and either alcohol or glycerin (about two to four times the weight of gum) were triturated in a mortar until the gum was wet. The water was added in small portions, triturating after each addition and a thick viscous mucilage resulted.

Automatic Mixer Method —— For quantities of mucilage over 250 Gm. an automatic mixer of the soda fountain type gave excellent results. The powdered gum, and either alcohol or glycerin, were placed in the cup and mixed well. The water was poured in slowly while the rotor was turning. After stirring about one minute, a very thick viscous mucilage was obtained. Usually there were many minute air bubbles present which gave a white opaque appearance to the mucilage.

Effect of Alcohol on Suspending Power of Tragacanth Mucilage —— Alcoholic solutions are frequently added to suspensions in which tragacanth is the suspending agent. In order to determine the effect of increasing concentrations of alcohol on the suspending power, several agents were tried. Using three agents, kaolin, talc, and bismuth subcarbonate, results showed that the presence of alcohol, up to 40 per cent, increased the suspending power. However, at the higher concentrations the nature of the suspension was altered so that it did not adhere to the sides of the bottle as usual, but fell away. A few shreds of precipitated tragacanth were visible in the mucilage containing 40 per cent alcohol.

Effect of Different Grades of Gum on the Viscosity and Suspending Power —— Various distributors of gum tragacanth list several prices for U.S.P. Tragacanth. From one distributor, the prices ranged from $4.18 a pound to $1.42 a pound. Evidently there is a difference in quality even though all grades were labeled as U.S.P. grade.

Tragacanth mucilages, 1 per cent in strength, were prepared from five grades of powdered gum and compared for viscosity and suspending power. Five hundred grams of mucilage were made from each gum, using the automatic mixer and stirring for one minute. Bismuth subcarbonate was the suspended agent.

Table I shows that the viscosity and suspending power varied greatly with the price and quality of gum although all were labeled U.S.P. grade. Gums "D" and "E" were from a different distributor. The viscosity and suspending power roughly parallel the price but minor variations occur due to the practice of grading on color.

TABLE I.—EFFECT OF DIFFERENT GRADES OF GUM ON THE VISCOSITY AND SUSPENDING POWER

Gum	Price per Lb.	Viscosity		Suspending Power	
		1 Week	2 Weeks	1 Week	3 Weeks
A	$4.18	Good	Very good	Excellent	Good
B	2.37	Poor	Poor	Excellent	Good
C	1.42	Poor	Poor	Fair	Poor
D	5.25	Good	Very good	Excellent	Excellent
E	4.25	Fair	Fair	Excellent	Excellent

Incompatibility Between Tragacanth Mucilage and Bismuth Subnitrate —— When mixed, 1 per cent tragacanth mucilage and bismuth subnitrate soon lump and jell to a firm mass which cannot be shaken up to a uniform mixture. A similar caking is observed with sterculia gum and bismuth subnitrate. No caking is observed with acacia and bismuth subnitrate but the suspending power is low and the bismuth subnitrate rapidly settles to the bottom.

Efficiency of Certain Electrolytes in Preventing the Caking of Tragacanth Mucilages, Gum "A," and Bismuth Subnitrate ——

(Continued on page 246)

SOME THEORETICAL ASPECTS OF ECONOMICS TO CONSIDER IN . . .

PRACTICAL DRUG STORE OPERATION

*By Robert V. Evanson**

There are far more factors that affect the success or failure of a pharmacy than are generally considered. In this paper, Mr. Evanson covers these lucidly, but briefly. If your pharmacy is proving a financial disappointment, or if you are considering expansion, much that he has to say will prove of value.

SELDOM does one who is about to open and operate a drug store, be it to sell drugs or otherwise, stop to analyze his actions and choices from the standpoint of a theoretical textbook. However, it can be seen from even a short glance that many of the aspects which are discussed at great lengths by theoretical economists may be directly affected by, or have an effect upon, drug store operation. Only two such aspects—economic welfare and total welfare—will be considered.

Business in the United States measures its accomplishments in many ways. Economic-wise, two of these measures are called the Gross National Product and the National Income. The gross national product measures all the output produced as goods and services; whereas the national income is the former less depreciation. To state this more simply in the terms of economic usage, national income measures the net output in terms of total earnings of labor and property—wages, profit, interest, and rent—aris-

Presented before the Conference of Teachers of Pharmacy Administration of the American Association of Colleges of Pharmacy, A.PH.A. Convention, Philadelphia, Pa., August, 1952.

* Instructor in Pharmacy Administration, Purdue Univ. School of Pharmacy.

ing from current production. In 1951, the gross national product amounted to $328 billion; however, national income amounted to only $276 billion.[a] The nation's pharmacists are greatly interested in the income aspects of their endeavors. Almost all surveys and reports issued are concerned with profit and loss and dollar-operation data, and many special articles are devoted to sales-making or expense-saving advice. This constitutes vital information related to economic welfare, which is that part of the total welfare to which a money measure can be given. This implies that a part of the total welfare cannot be measured in money values. This is true. A second part, non-economic in nature, is generally concerned with the satisfactions and/or services performed or enjoyed by people, but for which payment in money is neither made nor determinable. What contribution does a new drug store make to the economic and total welfare of the community when it opens its doors in competition with other established drug stores in the same community, neighborhood, or downtown area? The answer to this question may bring to light some of the justifications, even if theoretical, for the existence of many drug stores in business today, and perhaps many more which are to open their doors during the next few years.

Ghost Volume

An aspiring store owner usually asks, "Is the potential for this area great enough to produce volume for me as well as the established stores?" This question leads to answers which mean dollars in the owner's pocket and profit on his investment, although he is not certain that people will patronize his store. A second question, "What am I going to add to the economic and total welfare of the community?" might lead to answers which would cause a community-minded druggist to change his mind. In most cases the store owner goes ahead with his plans and ignores the latter query. From the standpoint of good management Mr. Owner selects a location and makes his building as attractive as possible both inside and outside. He then stocks his shelves with merchandise, hires a few helpers, and advertises his store by having a gala grand-opening sale.[b] If one considers that almost all opening sales produce a great deal of *ghost volume*—sales to one-time buyers from other market areas—the original success does not last long unless there is something to offer that other competitors cannot or do not provide.

There is always a great tendency to overdo an act which is easily performed or which looks easy to perform. One of these acts seems to be the opening of new businesses during full employment, inflationary periods during which even the inefficient seem to momentarily survive. After the new store loses its *ghost volume* and settles down to a normal course, its owner may be surprised to learn that he has actually done little or nothing to increase the national (or community) income. He may or may not have added something to the total welfare. A simple analysis of what has been done may be of great value and may well express some of the situations which exist currently in areas where the volume potential according to all indicators pointed to a great success.

Elements of Success

(1) An income is provided for the landlord who, knowing the value of property and location, would demand approximately the same stipend from his tenant regardless of the nature of the business. (2) The income derived from the sale and installation of furniture and fixtures, especially if new equipment is used, may be greater than that for other businesses which could have occupied the location. Therefore, income may be considered here as possibly increased over what it might have been under other circumstances.

(3) The stock-in-trade will in the main be nationally advertised or other merchandise available in any drug store. Sales of this merchandise through the new outlet may mean a decrease in sales through the other outlets. From the standpoint of production the manufacturer produces the same amount and ships it to the same wholesaler. The wholesaler merely supplies the same aggregate amount to his former clients plus one. Decreases in sales by the other businesses, if accompanied by proper buying practices based upon sales, may lead to a decrease in individual orders. This may be followed by higher price extensions and/or a decrease in wholesale discounts. Should old buying procedures be continued, the other stores will be carrying a single order for a longer period of time; thus, the retailer's handling costs will slowly but surely increase. From this it may be seen that an in-

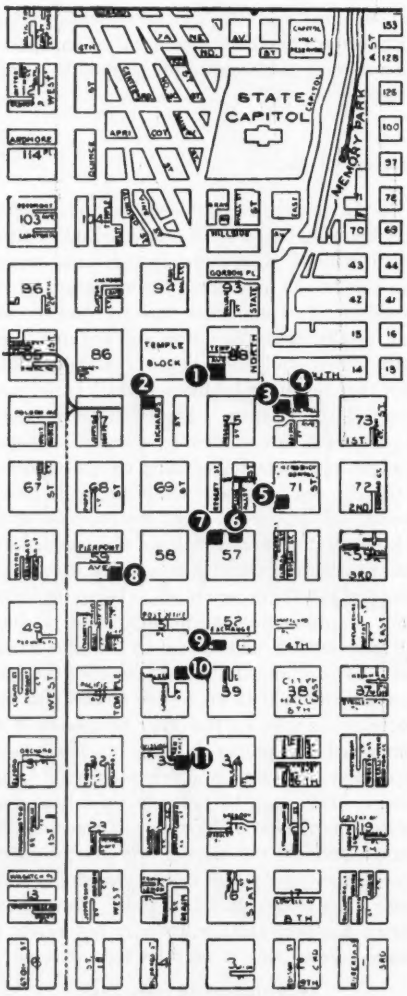
(Continued on page 238)

[a] *Survey of Current Business* **32**, No. 2, 5 (Feb., 1952).

[b] This brief sequence is given without lessening the seriousness of the minute details involved in opening a drug store. A detailed description here would not add to the subject under consideration.

CONVENTION PLANS GO FORWARD

Under the leadership of co-chairmen John B. Heinz and Dean L. Davis Hiner, plans for the 1953 convention of the AMERICAN PHARMACEUTICAL ASSOCIATION in Salt Lake City are progressing rapidly. The committees, announced in the last issue of THIS JOURNAL, have already begun work to assure every registrant a stimulating and exciting meeting.



The Hotel Reservation Form on the opposite page is a duplicate of the form sent to each member of the ASSOCIATION by first class mail which should be mailed immediately to the Salt Lake City Convention Bureau to assure accommodations for the meeting. The map on the lower left shows the location of the various hotels to the Hotel Utah, headquarters for the convention.

While the Salt Lake City Convention Committee has been cautioned not to be too lavish in its entertainment provisions, those who have experienced the hospitality of the West, know that some interesting and enjoyable hours are ahead of them especially in view of the fact that the Salt Lake City Choir and other features supplied by the famous L.D.S. Churchmen at Temple Square will add up to a most enjoyable meeting.

The ASSOCIATION extends a particular welcome to pharmacy students who are members of the Student Branches of the ASSOCIATION at the various colleges. Time will be set aside for a meeting of those students who are present at the Convention, and a formal program will be arranged under the direction of the Committee on Local Branches. It is expected that the General Sessions and Sessions of the House of Delegates and the Sections, will be of interest to many pharmacy students.

KEY

1. Hotel Utah
2. Temple Square Hotel
3. Belvedere Apt. Hotel
4. Carlton Hotel
5. Congress Hotel
6. Wilson Hotel
7. Chamber of Commerce
8. Miles Hotel
9. New Grand Hotel
10. Newhouse Hotel
11. Covey's New American Motor Lodge

HOTEL RESERVATION FORM

1953 CONVENTION

AMERICAN PHARMACEUTICAL ASSOCIATION

August 16–22, 1953 Salt Lake City, Utah

Except as otherwise announced, all meetings will be held at the Hotel Utah, Main Street and South Temple. NO RESERVATIONS WILL BE ACCEPTED DIRECTLY BY HOTELS. Use the following form in making all reservations.

A.PH.A. HOUSING COMMITTEE
SALT LAKE CITY CONVENTION BUREAU
P. O. Box 329
Salt Lake City 10, Utah

Please make hotel reservation(s) as shown below:

HOTEL.....First Choice
HOTEL.....Second Choice
HOTEL.....Third Choice

(If the hotels of your choice are unable to accept your reservations, the Housing Committee will make as good a reservation as possible elsewhere.)

Number of room(s) with bath.....*Double room(s).....Rate preferred $.....
.....Twin Bedded rooms.....Rate preferred $.....
.....Single room(s).....Rate preferred $.....

Arriving August.....Approximately.....a.m.....p.m. Leaving August.....
(Checkout hour 3:00 p.m.)

* A "double" room contains only one bed, for occupancy by two persons.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED

Please print the names of both persons for each double room or twin bedded rooms requested. Also names of all persons for whom you are requesting reservations and who will occupy the rooms asked for; OTHERWISE APPLICATION WILL BE RETURNED.

....
....
....

APPLICANT..... STREET ADDRESS.....

CITY.....ZONE..... STATE.....

HOTEL RATES IN SALT LAKE CITY

HOTEL	Single	Double	Twin	Suites
Utah	5.00 –10.00	7.00 –13.00	9.00–12.00	15.00–25.00
Carlton	2.00*– 5.00	5.00 – 6.00	7.00	12.00–15.00
Newhouse	4.50 – 9.00	6.50 –10.00	7.00– 9.00	12.00–20.00
Temple Square	3.50 – 4.50	5.00 – 6.50	7.00– 9.00	
Wilson	2.00*– 5.00	3.00*– 6.00	4.00– 7.00	
Congress	3.50 – 4.00	4.00 – 5.50	6.00– 8.00	15.00
New Grand	2.50*– 6.00	3.50*– 7.00	5.00– 8.00	
Miles	2.50*– 4.50	3.00*– 5.00	6.00	8.00
Belvedere	4.00 – 6.00	5.00 – 6.00	7.00	10.00–12.00
Covey's New America Motel	4.50 – 5.00		7.00 –10.50	9.50–12.50

* Without bath

Mail Request for Room Reservations to:

A.PH.A. HOUSING BUREAU

Salt Lake City Convention Bureau
P. O. Box 329, Salt Lake City 10, Utah

FROM THE SECRETARY'S DIARY FOR MARCH

2nd In the evening to the Science Talent dinner at the Statler where the Westinghouse Company, through Science Service, annually assembles outstanding high school pupils for the announcement of science scholarship winners.

5th In the forenoon at the Chemists' Club in New York with the Drug Trade Conference Committee on Uniform State Laws and found little disagreement as to what *should* be done about "substitution," but not much in the way of concrete suggestion as to what *could* be done. At noon to the annual staff conference luncheon of the American Social Hygiene Association. Now to Columbia University to meet with Director Powell, Dean Leuallen, and Mr. Mandel to discuss possible participation of the A.PH.A. and related organizations in the Columbia University Bicentennial in 1954. Next to the Waldorf-Astoria for a conference with Treasurer Schaefer and then to the annual dinner of the Drug, Chemical and Allied Trades Section of the New York Board of Trade, which brought together more than 2,000 of the top echelon of the drug industry who listened attentively (believe it or not) to former Congressman Fred Hartley expounding the virtues of the T.H. Law.

6th This morning in New York conferring with Council Chairman Ernest Little and then to the Waldorf for the first meeting of the Coordinating Committee organized by the Drug Chemical and Allied Trades Association to iron out differences in points of view on policies and legislation affecting the drug industry.

7th An early morning visit to the Episcopal Hospital where Edward Murphy of the A.PH.A. staff was awaiting an operation on his eyes. At the office reviewing museum plans with George Griffenhagen later in the day.

11th The past two days kept busy with the auditors who have now completed their annual canvass of the books and records of the ASSOCIATION. The evil spirits which have haunted us since the beginning of the year with staff illnesses continue their dirty work so that a day with full attendance has been something to write home about. At lunch with Dr. George Bachman of the Brookings Institution, reviewing the procedures which might give clues to an estimation of adequacy and demand for medical care.

12th This day replete with conferences on medical care problems, and with representatives of the State Department, on international complications resulting from the development of generic names for drugs.

14th A most interesting meeting today of the House of Delegates of the American Medical Association at the Statler, which was addressed by President Eisenhower and Majority Leader Taft of the U.S. Senate and others; and it appears that the Federal Security Agency will take on cabinet status without difficulty.

16th Today appearing before the House Committee on Government Organization to testify in favor of reorganization Plan No. 1 of 1953, which gives cabinet status to FSA, and suggesting pharmaceutical background for those who are to deal with drugs.

17th Sitting with a special group called together by Dr. Brumbaugh at the American Council on Education to consider certain problems of education in the South. At noon to Baltimore to meet Treasurer Schaefer and the auditors for a survey of A.PH.A. securities at the Baltimore National Bank. Following a conference with Finance Committee Chairman Dunning in his office, returning to Washington to meet A.C.A. Secretary Abrams at dinner and an evening conference on A.C.A. and A.PH.A. cooperation.

19th Following the day's activities, a trip to Baltimore for the annual dinner of the Baltimore Retail Druggists' Association where H. A. B. Dunning was the guest of honor and received a handsome scroll in recognition of his tremendous effort in completing the Kelly Memorial project.

23rd A conference with Dr. Aufranc of ODM and representatives of A.D.M.A., A.C.A., and N.A.R.D., on gamma globulin distribution, with general acquiescence in what was clearly the only feasible procedure for doing what has to be done with a scarce drug that is going to be in high demand under tense conditions. Yesterday at Fredericksburg, Va., conferring with George Griffenhagen and the custodian of the Mercer Apothecary Shop on many problems dealing with this shrine.

31st Yesterday and today working with the Special A.A.C.P. Committee on Hospital Pharmacy Curriculum in connection with proposals for academic and non-academic hospital pharmacy internships, and in the evening to dinner with Iowa Dean and Mrs. Louis Zopf and Dr. and Mrs. J. L. Powers.

your own records will tell you:

Peritrate prevents attacks of angina pectoris

Physicians are impressed and patients pleased with the way Peritrate

1. reduces the number of anginal attacks
2. reduces the severity of those attacks not prevented.

As your own prescription records will tell you, Peritrate is growing in acceptance as a drug of choice in angina pectoris.

Clue to sustained sales

The clue to successful prophylaxis of angina pectoris is, of course, a regular, sustained dosage schedule.

The continuous day-in, day-out medication helps make Peritrate a steady reliable sales item:

- each Peritrate customer requires 10 to 15 bottles of 100 a year

Price List

	Your cost	Fair trade minimum
100's	$ 2.50 each	$ 3.75
500's	10.00 each	15.00
5000's	80.00 each	120.00

Peritrate®

TETRANITRATE

BRAND OF PENTAERYTHRITOL TETRANITRATE

WARNER-CHILCOTT
Laboratories NEW YORK

Petrocera

a versatile ointment base

BY A. N. MARTIN[†]
A. D. MARCUS[‡]
C. O. LEE[§]

WHITE Ointment and Yellow Ointment, were introduced into the U.S.P. as simple bases for the easy incorporation of a number of drugs. However, when medicinal substances of various consistencies are incorporated in these bases, additional wax is sometimes required to increase the firmness of the medicinal ointment. This addition is attended by the process of fusion and the need of additional apparatus.

The following scheme was devised with a view to obviating the disadvantages of the fusion process. A simple ointment base was prepared with the high wax content of 33.5 per cent. This value was chosen so that Pine Tar Ointment, the official ointment with the highest wax content, could be prepared by simple incorporation without heat.

The high-wax-content base is referred to as White Petrocera or Yellow Petrocera, depending upon the use of white or yellow petrolatum and white or yellow beeswax. The formula for the white base is:

White Petrocera

White Wax	335 Gm.
White Petrolatum	665 Gm.
To make	1000 Gm.

Melt the white wax in a suitable container on a water bath and add the white petrolatum. Continue to heat the mixture until completely liquefied, then remove from the bath and stir occasionally until the mixture has cooled to room temperature.

White Petrocera, although containing a high concentration of wax, is easily manipulated on a slab or in a mortar even in the winter months under normal conditions. It can be diluted with White Petrolatum to produce a product of any desired wax content below 33.5 per cent *without the use of heat.*

The application of Petrocera to the preparation of two official ointments will serve to exemplify its versatility.

In Table I is shown the formula for Pine Tar Ointment, N.F. Accompanying the official formula is a proposed simplified monograph in which Yellow Petrocera replaces both the yellow wax and yellow ointment and removes the objectionable requirement of fusion.

TABLE I.—OFFICIAL AND MODIFIED MONOGRAPHS FOR PINE TAR OINTMENT

Pine Tar Ointment, N.F.

Pine Tar	500 Gm.
Yellow Wax	150 Gm.
Yellow Ointment	350 Gm.
To make	1000 Gm.

Melt the yellow wax and the yellow ointment together on a water bath, mix well, remove from the heat, and stir until the mixture congeals. Then add the pine tar.

Proposed Simplified Monograph

Pine Tar	500 Gm.
Yellow Petrocera	500 Gm.
To make	1000 Gm.

Mix the ingredients.

Presented before the Section on Practical Pharmacy, A.PH.A. Convention, Philadelphia, Pa., August, 1952.
† Assistant Professor of Pharmacy, Temple University, Philadelphia, Pa.
‡ Assistant Professor of Pharmacy, Drake University, Des Moines, Iowa.
§ Professor of Pharmacy, Purdue University, West Lafayette, Ind.

It may be seen from a comparison of these two methods that the use of Petrocera eliminates the time, expense, and inconvenience involved in heating, melting, stirring, and cooling of the official product. This simplification may be applied to the preparation of some twenty other official ointments.

The calculations involved in revising the monograph are quite simple. In the above example, the wax content of Yellow Ointment (17.5 Gm.) is added to the 150 Gm. of Yellow Wax to give a total of 167.5 Gm. in the official ointment. Yellow Petrocera contains 335 Gm. of Yellow Wax in 1000 Gm. of base or 167.5 Gm. in 500 Gm. Thus 500 Gm. of Petrocera is mixed with 500 Gm. of Pine Tar to make 1000 Gm. of the modified ointment.

Table II gives the official and modified formulas for Red Mercuric Oxide Ointment. The official directions call for the fusion of wax with petrolatum. This heating operation may be eliminated and the entire procedure decidedly simplified by the use of Petrocera.

TABLE II.—OFFICIAL AND MODIFIED MONOGRAPHS FOR RED MERCURIC OXIDE OINTMENT

Red Mercuric Oxide Ointment, N.F.	
Red Mercuric Oxide	100 Gm.
Liquid Petrolatum	50 Gm.
Yellow Wax	50 Gm.
Wool Fat	300 Gm.
Petrolatum	500 Gm.
To make	1000 Gm.

Triturate the red mercuric oxide with the liquid petrolatum until the mixture is smooth and absolutely free from gritty particles; then incorporate the wool fat in divided portions, and finally incorporate this mixture thoroughly with the mixture of yellow wax and petrolatum previously melted and cooled.

Proposed Simplified Monograph	
Red Mercuric Oxide	100 Gm.
Liquid Petrolatum	50 Gm.
Wool Fat	300 Gm.
Yellow Petrocera	149 Gm.
Petrolatum	401 Gm.
To make	1000 Gm.

Triturate the red mercuric oxide with the liquid petrolatum until the mixture is smooth and absolutely free of gritty particles; then incorporate the wool fat in divided portions, and finally incorporate this mixture thoroughly with the yellow petrocera and petrolatum.

White and Yellow Petrocera may find additional use by the practicing pharmacist as stock bases for the preparation of non-official medicinal ointments. A hydrophilic Petrocera may be prepared by adding 1 per cent of cholesterol to the wax and petrolatum mixture during the manufacture of the base.

For the use of the pharmacist, the approximate proportion of Petrocera in combination with petrolatum to give any wax content and thus any consistency desired within the range of 0 to 33.5 per cent of wax has been compiled in Table III.

TABLE III.—APPROXIMATE RATIOS OF PETROCERA AND PETROLATUM TO YIELD BASES WITH VARIOUS WAX CONCENTRATIONS

Wax Content Desired, %	Parts of Petrocera Required	Parts of Petrolatum Required
0	0	100
2	6	94
5	15	85
7	21	79
10	30	70
12	36	64
15	45	55
17	50	50
20	60	40
25	75	25
30	90	10
33.5	100	0

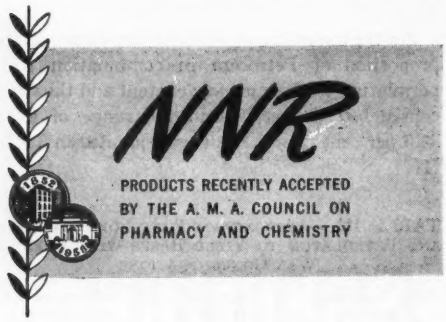
Authors' Summary

1. A new ointment base referred to as Petrocera and containing 33.5 per cent of beeswax has been formulated.

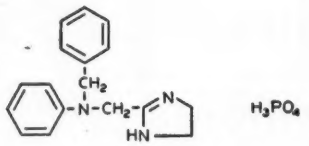
2. The base simplifies the preparation of a number of official ointments by eliminating the inconveniences of the fusion process.

3. Petrocera may be used by the practicing pharmacist as a versatile stock ointment base. It may be mixed with petrolatum on the ointment slab at room temperature to obtain a base of any wax content and consistency within practical limits. The ratio of petrolatum to Petrocera for various wax concentrations is given in tabular form.

4. Petrocera may be made into a hydrophilic base by the addition of 1 per cent cholesterol during its manufacture.



ANTAZOLINE PHOSPHATE.—Antistine Phosphate (Ciba).—$C_{17}H_{19}N_3 . H_3PO_4$.—M. W. 363.35.—2 - (N - Benzylanilinomethyl) - 2-imidazoline phosphate.—The structural formula of antazoline phosphate may be represented as follows:



Actions and Uses.—Antazoline phosphate shares the action of its hydrochloride salt and other antihistamine compounds. See the general statement on Histamine-Antagonizing Agents and the monograph on Antazoline Hydrochloride. The phosphate is preferable to the hydrochloride for ophthalmic application in the management of ocular allergies because it produces less smarting and stinging. Systemic therapy by oral administration of antazoline hydrochloride is sometimes desirable to supplement local treatment in the eye.

Dosage.—An 0.5% isotonic solution of antazoline phosphate is employed for instillation in the eye. One or two drops are instilled in each eye every three or four hours or less frequently as required to relieve symptoms.

Tests and Standards.—
Physical Properties: Antazoline phosphate is a white, odorless, crystalline powder with a bitter taste. It melts with decomposition between 194 and 198°. It is soluble in water, sparingly soluble in methanol, and practically insoluble in benzene and ether. The pH of a 2% solution is about 4.5.
[For more information regarding tests and standards, and for dosage forms see *J. A. M. A.*, **150**: 1220 (Nov. 22, 1952).]

Ciba Pharmaceutical Products, Inc., Summit, N. J.

Ophthalmic Solution Antistine Phosphate 0.5%: 15 cc. dropper bottles. A solution containing 5 mg. of antazoline phosphate in each cubic centimeter. Preserved with 0.0065% methylparaben and 0.0035% propylparaben. U. S. Patent 2,449,241. U. S. trademark 432,457.

POLYMYXIN

Polymyxin is the generic term employed to designate a series of related antibiotics derived from various strains of the spore-forming soil bacterium, Bacillus polymyxa (*B. aerosporus* Greer). The various polymyxins which have been isolated are differentiated by affixing letters of the alphabet which do not necessarily signify the order of isolation: polymyxin A, polymyxin B, etc. Polymyxin B, is the least toxic of those adequately studied. Chemically, the polymyxins are basic polypeptides. Polymyxin B contains leucine, threonine, phenylalanine, α,γ-diaminobutyric acid, and a fatty acid of empirical formula, $C_9H_{18}O_2$, and has a molecular weight of about 1,000. It is stable as the acid salt, polymyxin B sulfate, in the dry state; in solution it is stable for extended periods if buffers are added. Alkaline solutions are less stable. The antibiotic is highly effective *in vitro* against many gram-negative micro-organisms. See the monograph on polymyxin B sulfate.

POLYMYXIN B SULFATE.—Aerosporin Sulfate (Burroughs Wellcome).—A basic polypeptide containing leucine, threonine, phenylalanine, α,γ-diaminobutyric acid, and a fatty acid of unknown structure (empirical formula, $C_9H_{18}O_2$).

Actions and Uses.—Polymyxin B sulfate, an antiobiotic derived from an isolated strain of Bacillus polymyxa, is bactericidal in vitro for most gram-negative micro-organisms. Escherichia coli, Shigella, Pseudomonas aeruginosa (*B. pyocyaneus*), Aerobacter aerogenes, Klebsiella pneumoniae and Hemophilus influenzae are sensitive to Polymyxin B sulfate concentrates of 0.005 to 2 μg. per cubic centimeter. Proteus vulgaris (*B. proteus*) is usually more resistant. Most strains of P. aeruginosa are highly sensitive. Clinical observations indicate that the development of bacterial resistance is unlikely.

Polymyxin B sulfate is effective clinically by intramuscular injection (and intrathecally, when indicated) for the treatment of pseudomonal (pyocyaneal) bacteremia, meningitis, and urinary tract infection, and for the treatment of meningitis caused by other gram-negative bacilli such as Aerobacter aerogenes, E. coli, K. pneumoniae, and H. influenzae when these are more sensitive to polymyxin B than to other effective antibiotics. Since the antibiotic does not readily pass into the spinal fluid when given intramuscularly, the drug should be given intrathecally as well as intramuscularly for the treatment of susceptible meningeal infections. The intrathecal doses required do not produce systemic toxic effects and

the drug is considered relatively nonirritating to the meninges. Intrathecal injections should be made with the care that is essential in the performance of repeated spinal punctures.

Polymyxin B sulfate, when given parenterally may produce neurotoxic and/or nephrotoxic effects, but it has a low degree of toxicity when used in doses below 3 mg. per kilogram of body weight. Neurologic disturbances are usually subjective and include dizziness, mild weakness, and paresthesias of the mouth, face, and less frequently, of the extremities. These are not usually considered sufficiently serious to warrant discontinuance of therapy. Nephrotoxic effects, with damage to the kidney tubular epithelium, are manifested by albuminuria and nitrogen retention. The danger of renal damage is minimal when the drug is administered within the recommended dosage range. Other toxic effects include occasional drug fever, and pain at the site of injection which can be lessened by employing 1% procaine hydrochloride solution in the diluent. The possible danger of renal damage makes it desirable to limit the parenteral use of the drug to patients who are under close observation, where there is access to adequate laboratory facilities. Renal dysfunction and nitrogen retention do not contraindicate injection of the drug when it is specifically indicated unless such use is found to aggravate pre-existing renal damage.

Polymyxin B sulfate also may be useful orally in the nonsystemic treatment of certain intestinal infections such as Shigella or Pseudomonas enteritis, when present as a pathogen. It is too poorly absorbed orally to warrant use by this route in the treatment of systemic infections. Toxic manifestations have not been observed with oral use of the drug.

Polymyxin B sulfate is also useful by topical application for the treatment of local infections caused by susceptible gram-negative bacilli, especially Pseudomonas aeruginosa. It may be employed locally also to prevent contamination by gram-negative organisms of wounds or burns.

Dosage.—Intramuscularly, the average daily dosage extends from 1.5 mg. (15,000 units) to 2.5 mg. (25,000 units) per kilogram of body weight. The total daily dosage should not exceed 2.5 mg. per kilogram and, in any case, not more than 0.2 Gm. (2 million units). The drug is usually administered in three divided doses at six- to eight-hour intervals. Such doses provide therapeutic blood serum levels of 1 to 8 μg. per cubic centimeter. The peak level is reached within 30 minutes to two hours after injection; one-half the peak level is present after six hours, with detectable levels up to 12 hours' duration. In patients with impaired renal function and nitrogen retention, a dosage of 20 mg. every eight hours maintains serum levels at 2.5 μg. per cubic centimeter. A solution for intramuscular use is prepared by dissolving 50 mg. in water for injection-U. S. P., sterile isotonic sodium chloride solution, or 0.5 cc. of 1% sterile procaine hydrochloride solution. If procaine is used, the usual precaution should be observed.

Intrathecally, the following doses are suggested: Children under two years of age, 2 mg. daily for three or four days, then 2.5 mg. every other day; children over two years and adults, 5 mg. daily for three or four days, then 5 mg. every other day. A solution for intrathecal injection is prepared by adding 10 cc. of sterile isotonic sodium chloride solution to 50 mg. of the drug. Solutions prepared for intramuscular use and containing procaine should not be used for intrathecal administration.

Orally, for adults and older children, the dosage is 75 to 100 mg. four times daily; children two to five years of age, 50 to 75 mg. three times daily; children up to two years of age, 25 to 50 mg. three times daily. For infants and young children the tablets may be crushed and mixed with a suitable food or dissolved in water and flavored as desired.

For topical application, the drug, in sterile dry form, is dissolved in distilled water or isotonic sodium chloride solution for administration as drops, spray, wet dressing, or irrigation. Concentrations of 0.1% (10,000 units per cubic centimeter) to 0.25% (250,000 units per cubic centimeter) are considered to be effective and nonirritating. Concentrations of 1% or more may produce local irritation when applied to sensitive areas such as the eye. Neither bacterial resistance nor sensitivity reactions have been observed, but until further experience is gained, a total of not more than 2 billion units daily should be applied in cases of severe burns and open wounds. Solutions of the antibiotic are stable for at least six months if kept under refrigeration.

Tests and Standards—
Physical Properties: Polymyxin B sulfate is a white to cream-colored irregular scale-like material, which has no definite melting point, but decomposes at about 230°. It is soluble in water and isotonic sodium chloride solution. A 2% solution has a pH of about 5.7.
[For more information regarding tests and standards, and for dosage forms see *J. A. M. A.*, **150:** 1220 (Nov. 22, 1952).]

Burroughs Wellcome & Company, Inc., Tuckahoe, New York

Aerosporin Sulfate (Parenteral): 500,000 unit vials.

(Continued on next page)

N.N.R.

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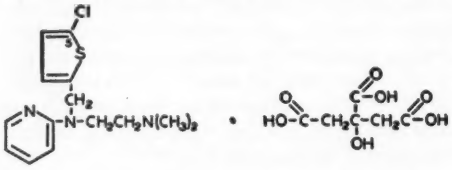
Tabloids Aerosporin Sulfate: 500,000 units. U. S. Patent 2,565,057. U. S. Trademark 505,252.

CHLOROMETHAPYRILENE CITRATE.—Chlorothen Citrate (Whittier).—$C_{14}H_{18}ClN_3S \cdot C_6H_8O_7$.—M. W. 487.96.—2-[(2-D methylaminoethyl) - 2 - (5 - chlorothenylamino)]pyridine citrate.—N,N - Dimethyl - N′ - (2 - pyridyl)-N′ - (5 - chloro - 2 - thenyl)ethylenediamine citrate.—The structural formula of chloromethapyrilene citrate may be represented as follows:



Actions and Uses.—See general statement on histamine antagonizing agents.

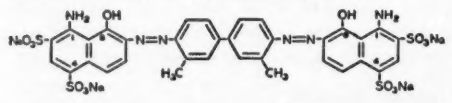
Dosage.—The average adult dose is 25 mg. administered orally.

Tests and Standards.—
Physical Properties: Chloromethapyrilene citrate is a white, practically odorless solid. It melts between 116 and 118°. It is very slightly soluble in ether. The amounts which dissolve in the following solvents to form 100 ml. of solution are 2.5 Gm. in alcohol and 4.7 Gm. in water. When sodium hydroxide T.S. is added to a 1% solution, the free base is obtained as an oil. The 1% solution is clear and colorless, and has a pH between 3.9 and 4.1.
[For more information regarding tests and standards, and for dosage forms see *J. A. M. A.*, 150: 1221 (Nov. 22, 1952).]

Whittier Laboratories, Chicago.

Tablets Chlorothen Citrate: 25 mg.

EVANS BLUE.—Tetrasodium salt of 4,4′-bis[7 - (1 - amino - 8 - hydroxy - 2,4 - disulfo)-naphthylazo] - 3,3′ - bitolyl.—$C_{34}H_{24}N_6Na_4O_{14}S_4$.—M. W. 960.83.—The structural formula of Evans blue may be represented as follows:



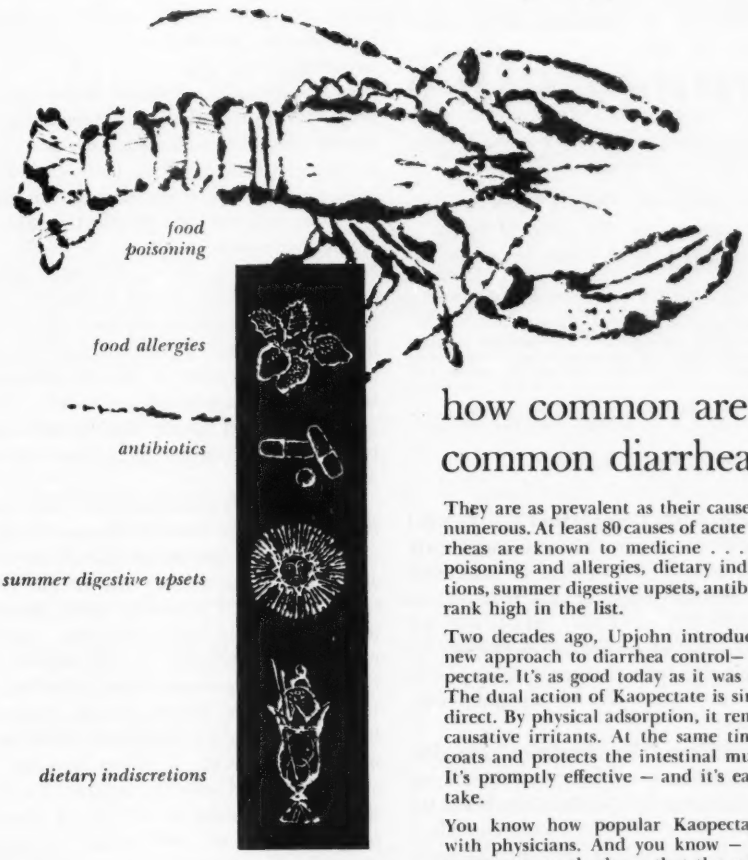
Actions and Uses.—Evans blue is a diazo dye that, when injected into the blood stream, combines firmly with plasma albumin and leaves the circulation very slowly. Its optical density is directly proportional to its concentration, and the maximum spectral absorption of the dye in plasma occurs where absorption of hemoglobin is so negligible that slight hemolysis does not invalidate the reading.

Evans blue is useful as an intravenous diagnostic agent for the colorimetric determination of blood volume by the plasma-dye-hematocrit method. Although the technique of the test is difficult, it gives good results when properly performed. The normal value for blood volume varies with body weight and hematocrit and cannot be stated specifically. The value for men tends to be higher than for women.

Dosage.—Evans blue is administered intravenously with the patient in the fasting state (to avoid lipemia) and under approximate basal conditions, including recumbency for at least 15 minutes prior to the test. The dosage consists of a single injection, into the antecubital vein, of 25 mg. of dye as 5 cc. of an 0.5% aqueous solution which has been further diluted with 1 to 2 cc. of isotonic sodium chloride solution. Before the dye is administered, about 10 cc. of blood is withdrawn. The tourniquet must be released promptly to avoid venous stasis which results in inaccuracy of the hematocrit value. The dye is then injected cautiously to avoid extravasation and local staining of the perivascular tissues. The syringe should be rinsed with blood several times to ensure complete administration of the dye. Exactly 10 minutes after beginning the injection (15 minutes in acute shock or cardiac decompensation) a second 10 cc. sample of blood is withdrawn from the antecubital vein of the opposite arm, again with care to avoid undue stasis. Each sample is placed immediately on withdrawal into several 4 cc. hematocrit tubes containing 1 mg. of dried heparin sodium per tube to prevent coagulation. When gross hemolysis or lipemia of the plasma cannot be avoided, an extraction method should be employed. Other tests desired may be performed on the undyed sample. The hematocrit tubes are centrifuged at 3,000 r. p. m. with a radius of 15 cm. to determine the hematocrit. Samples of the dye-tinged and dye-free plasma are then separated from the tubes for comparison with a properly calibrated photometer. With any one manufacturer's lot of dye it is necessary to calculate the optical density of a 1:500 dilution of the dye in normal dye-free plasma when a 1-cm. cuvette is used for readings (otherwise the dilution is in proportion to the size used). The volumes of the blood components are calculated in accordance with the following formulas:

1. Total plasma vol. = [ml. of dye solution injected (5.0 ml.) × dilution of standard (500) × optical density of a standard] ÷ [optical density of dye-tinged plasma (unknown)]

(*Continued on page 236*)



how common are common diarrheas?

They are as prevalent as their causes are numerous. At least 80 causes of acute diarrheas are known to medicine . . . food poisoning and allergies, dietary indiscretions, summer digestive upsets, antibiotics rank high in the list.

Two decades ago, Upjohn introduced a new approach to diarrhea control— Kaopectate. It's as good today as it was then. The dual action of Kaopectate is simple, direct. By physical adsorption, it removes causative irritants. At the same time, it coats and protects the intestinal mucosa. It's promptly effective — and it's easy to take.

You know how popular Kaopectate is with physicians. And you know — from your year-round sales — that the call for Kaopectate is *almost* as common as common diarrheas.

Kaopectate

TRADEMARK REG. U.S. PAT. OFF.

first thought in the control of common diarrheas

each fluidounce contains: **Kaolin** ..... **90 grs.**
Pectin ..... **2 grs.**

In an aromatized and carminative vehicle

Upjohn THE UPJOHN COMPANY, KALAMAZOO, MICHIGAN

N.N.R.

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2. Total blood vol. = Total plasma vol. / (1 − (0.96 × hematocrit))
3. Red cell vol. = Total blood vol.-Total plasma vol.

Normal values are estimated on the basis of normal body weight (in kg.) of the patient when healthy. Experiments on men of average build indicate normal values as follows:

1. Plasma vol. in cc. = Wt. in kg. × 45
2. Blood vol. in cc. = Wt. in kg. × 85
3. Red cell vol. in cc. = Wt. in kg. × 40

Values for women are usually somewhat lower.

Tests and Standards.—
Physical Properties: Evans blue is a bluish green or brown iridescent powder. It is very soluble in water; very slightly soluble in alcohol; and practically insoluble in benzene, carbon tetrachloride, and ether. The pH of a 0.5% solution is 5.5–7.5.
[For more information regarding tests and standards, and for dosage forms see *J. A. M. A.*, **150:** 1486 (Dec. 13, 1952).]

Wm. R. Warner, New York.

BASIC ALUMINUM CARBONATE.—Basaljel (Wyeth).—An aluminum hydroxide-carbonate complex, available only as an aqueous suspension containing the equivalent of 4.9 to 5.3% of aluminum oxide (Al_2O_3.—F. W. 101.94) and not less than 2.4% of carbon dioxide (CO_2.—F. W. 44.01). Basic aluminum carbonate suspension is prepared by the interaction of aluminum salts and carbonates.

Actions and Uses.—Like aluminum hydroxide, but unlike aluminum phosphate, basic aluminum carbonate combines with the phosphate ion in the intestinal tract to form insoluble aluminum phosphate which is excreted as such in the stool. This diminishes the amount of phosphate available for intestinal resorption, which lowers the serum inorganic phosphorus and favors more complete tubular resorption by the kidney, thus reducing the urinary excretion of phosphate. Basic aluminum carbonate is approximately one-third more effective than aluminum hydroxide in phosphorus-binding power; this is partly attributed to its greater aluminum content. Therefore, basic aluminum carbonate is primarily useful, in conjunction with a low phosphorus diet, to reduce the concentration and precipitation of urinary phosphate in patients susceptible to the formation of phosphatic calculi of the urinary tract. It may thus be used as an adjunct in the prevention or management of phosphatic stone formation in the kidneys, ureters, and bladder, Limitation of phosphorus intake and diversion of phosphate through the intestine by means of basic aluminum carbonate is proposed to replace the use of urine acidifiers and the acid-ash diet for control of the urinary precipitation of phosphate when the latter method is ineffectual because of the presence of ammonia-forming bacterial infection or could lead to acidosis resulting from impairment of renal function.

Basic aluminum carbonate shares the antacid properties of other aluminum compounds used to control gastric hyperacidity and as an adjunct in the treatment of peptic ulcer. Its acid-consuming capacity is greater than that of the upper allowable range of an equivalent weight of aluminum hydroxide.

Basic aluminum carbonate is not contraindicated in the presence of kidney damage or in the presence of an alkaline urine caused by persistent infection. It shares the tendency to produce constipation secondary to the mild astringent action that is characteristic of similar aluminum preparations, but usually this can be easily controlled by the concomitant administration of a mild laxative.

Dosage.—Basic aluminum carbonate is administered orally. In the management of phosphatic urinary calculi, the dosage should be regulated according to the urinary phosphorus excretion of the patient. The average initial adult dose is 30 cc. four times daily, preferably taken after meals and at bedtime. In the majority of patients, this will reduce urinary phosphate excretion within a few days to 0.2 Gm. or less per 24 hours. The urinary phosphate should be determined at least once a month, and the patient should be placed on a diet designed to provide a daily mineral intake of 1.3 Gm. of phosphorus, 0.7 Gm. of calcium, and 13 Gm. of nitrogen, and to furnish about 2,500 calories. Such a diet can be followed for an indefinite period by the average ambulant patient. The average adult antacid dose is 4 to 8 cc., repeated as necessary to control gastric hyperacidity.

Tests and Standards.—
Dosage Forms of Basic Aluminum Carbonate
Suspension. Physical Properties: Basic aluminum carbonate suspension is a white, creamy, thixotropic gel which may separate to some extent on standing. On exposure to atmospheric pressure, the preparation gradually loses carbon dioxide; it must be kept in tightly closed containers. The pH of basic aluminum carbonate suspension is between 6.6 and 7.0.
[For more information regarding tests and standards see *J. A. M. A.*, **150:** 1487 (Dec. 13, 1952).]

Wyeth, Inc., Philadelphia.

Suspension Basaljel: 360-cc. bottles. A flavored aqueous suspension containing the equivalent of 4.9 to 5.3% of aluminum oxide and not less than 2.4% of carbon dioxide.

when healing lags...

Chloresium®

brand of water-soluble chlorophyll derivatives

ointment · solution (plain)

proves its value to the physician

in wounds

"Granulation tissue seemed to be of finer texture, more firm and to form more rapidly with chlorophyll (CHLORESIUM)..."[1]

in decubitus ulcers

"...a most effective agent is generally agreed to be chlorophyll ointment and liquid."[2]

in pilonidal cyst wounds

"The main advantage...is a prompt, clean healing with firm granulation."[3]

in other resistant lesions

"CHLORESIUM...an active agent in restoring affected tissues to a state conducive to normal repair..."[4]

"...effective agents in facilitating growth of granulation tissue and epithelization."[5]

1. Bowers, W. F.: Am. J. Surg. *73*:37, 1947.
2. Pollock, L. J., and others: J. A. M. A. *146*:1551 (Aug. 25) 1951.
3. Niemiro, B. J.: Journal Lancet *71*:364, 1951.
4. Lowry, K. E.: Postgrad. Med. *11*:523, 1952.
5. Combes, F. C.; Zuckerman, B., and Kern, A. B.: New York State J. Med. *52*:1025, 1952.

CHLORESIUM OINTMENT and SOLUTION (Plain) contain water-soluble derivatives of chlorophyll "a" as standardized in N.N.R. These derivatives, highly concentrated and purified, provide the optimum therapeutic benefits obtainable from chlorophyll.

CHLORESIUM OINTMENT—1-ounce and 4-ounce tubes.

CHLORESIUM SOLUTION (Plain)—2-ounce and 8-ounce bottles.

Literature containing comprehensive information on the uses of chlorophyll in medicine will be forwarded on request. Reprints of recent papers are also available.

Rystan company inc.

Mount Vernon, New York

Economic Aspects

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creased cost may be borne by the retailer or passed on to the consumer in some way through price adjustments. On advertised brands, and especially those which are fair-traded, the retailer may have to take some loss or at least less profit in order to maintain his competitive position.

(4) The new store may do well prescription-wise or it may founder in its own dust. Prescription sales are absolutely demand in nature; therefore it is well to recognize the fact that the prescriptions available will be filled whether or not the new store exists. Any increase or decrease in economic welfare will stem from the ability and integrity of the pharmacist to charge more or less than his existing competitors. A fair price charged by all will constitute practically no change. The increased merchandise cost analogy above may well be applied here to prescription products to a greater extent, and in this case any rise in material costs for prescriptions will be passed on to the consumer. While this rise in price to the consumer may—in a certain sense—seem to add to the national income, it also will reduce the amount of disposable income which can be spent on other satisfactions including the ability to save, and may constitute an actual decrease in economic welfare. Theoretically it may be suggested that an increase in competition by addition might actually raise prices to the consumer and decrease the number of transactions per retailer by causing a certain amount of available business to be divided inefficiently among too many retailers.

(5) Personnel problems are always an important factor in drug store operation. As a major expense item, the wages paid for services rendered directly affect the national income and economic welfare. For this reason an owner may feel that he is increasing employment and wages by opening a store and providing jobs for the community. This can be a very debatable line of reasoning. While the new employees are in the process of earning their wages, the other store owners may be having more worries attempting to justify wages on the basis of a reduced sales volume. This is quite evident today if one pays attention to the continuous discussion and worry about the decreasing spread and increasing salary costs, to say nothing of the other expenses which are rising proportionately. In many cases competition for labor in both large and small labor markets will price professional labor of any calibre out of the scope of safe operation. In some cases there are so many drug stores that the death or retirement of a pharmacist may well mean a curtailment of drug store services caused by the closing of a store or of its prescription department. At the same time non-professional wage standards based upon safe operating ratios are oftentimes low and unfair with respect to other industries and to other retail establishments. This situation has resulted in many instances in forced employment of inefficient, inexperienced, and incapable clerks. Could this be the reason, or at least a reason, why drug stores are one by one remodeling more on the lines of self-selection in departments which require little or no selling ability or professional discretion?

From Employee to Employer

(6) The final point in this observation and analysis involves the new drug store owner—in most cases a registered pharmacist. The new owner had worked for some other pharmacist for a salary ranging from $75 to $120 per week with few worries, no monetary investment, and no net profit. As a new owner he will probably pay himself no more, and in many cases less, than he previously received. His hourly wage will show that, instead of the $2.50 or $3.00 per hour he had earned as an employee for 40 hours per week, he is averaging $1.25 or $1.50 for 80 hours or more per week. This of course is generally justified in the minds of many owners by the fact that they have the net profit at the end of the year. However, if the data published in the *Lilly Digest for 1950* is accepted as reasonably correct for the nation as a whole, the new owner's chances for making a net profit of over four per cent are slightly over fifty per cent. He may well be in the twelve per cent of operators who netted less than two per cent, or he might "accidently" be in the lower thirteen per cent who realized a net loss for their efforts. Further, should he realize a gain for himself as a profit on his investment, this same profit may be offset by equal or greater losses by his competitors. It follows that the new store may not make any addition to the economic welfare of the community, and a net profit to the proprietor will represent only a net private addition as regards the national income.

Perhaps this last statement is too harsh in the light of recent trends in the business world. During the last few years business has steadily increased from the standpoint of both dollar volume and the amount consumed. However, there is a marginal point at which one more store may be detrimental to sound economic practices for the community as a whole, and certainly detrimental to the private welfare and the economic stability

of the stores existing in the community. On the face of the situation there may be no economic justification for many of the drug stores in operation today—or which may open anew tomorrow. It will be necessary to justify many of these stores from another point of analysis. This will turn the attention to the justification on the basis of a contribution to the total welfare of the community.

The total welfare of the community is made up of its economic welfare plus all the satisfactions and dissatisfactions which cannot be measured or determined in money values. To give a simple example, economic welfare may be increased by expenditures to convert a large wooded area into a beautiful state park. The total welfare is increased by that expenditure and also by all the satisfaction which is provided for the inhabitants of that state in the enjoyment of the beauty and the facilities made available. It would be difficult indeed to measure the satisfaction received from a relaxing walk among the trees and flowers, or from a swim in the park pool. Another aptly descriptive example can be found in the addition to the welfare for similar services rendered by a hired vehicle and a privately owned vehicle. In the first instance each passenger is assessed a fee which shows up as an addition to the national income. In the latter case no fee is charged. There is no way in which to determine the value of the ride to the owner even though the cost per ride may actually be greater than the taxi fare. The satisfaction received is a non-economic part of the total welfare and in most cases provides the justification for the individual to own and to operate the vehicle.

Non-Economic Factors

It is necessary as the second part of this discussion to consider briefly some of the non-economic satisfactions and dissatisfactions which enter into the daily functions of drug store operation. In many cases the only justification to a community for permitting a store to remain open lies in the fact that the increase in total welfare is great enough to offset any decreasing effects or dissatisfactions. The following, though an incomplete listing, will serve to suggest some of the more important of the elements of operation which cannot be measured or valued in dollars and cents to the extent of showing their total value to the welfare of the community.

(1) Convenience is one of the most important non-evaluated satisfactions provided by drug stores, especially those stores located in neighborhood and fringe areas. The owner performs a service by placing the merchandise within easy and daily reach of his customers. For this reason he may prosper or at least make a fair living in the face of stiff competiton in his market area. This may be true to a greater extent in larger towns and cities which have residential areas not too far removed from the central shopping district. It likewise may be true in large shopping districts which have drug stores on every corner, on adjacent corners, or on opposite corners. While each store may be competing against the others, each has its own particular group of customers who trade at the store only because it is convenient to them in the normal course of their daily routine.

(2) Inconvenience is an immeasurable dissatisfaction generally the result of improper buying and stock control. (It is assumed here that an up-to-date operator will not suffer from the inconvenience of improper location.) The duty of the owner is to serve as a buyer for his community. When customers are often told "I don't have that in stock" or "I just put that item in the want book," they soon find other sources of supply upon which they can depend. Although it is impossible to measure the inconvenience to customers, the net effects are often discernible in a reduced volume and profit. However, too many proprietors will attribute such reductions to other cause and effect sequences. Where competition exists, an item out of stock is a lost sale. From this, then, it can be seen that the cost and effort involved in proper control and buying of merchandise to meet customer needs is greatly overbalanced by the satisfaction enjoyed by each customer when his demands (and impulses) are served without difficulty or unnecessary waiting.

(3) Another satisfaction which can be afforded by the pharmacist is his ability to adequately provide help and information for the doctors, dentists, and veterinarians in his community. Certainly as a dispenser of all types of medicaments the pharmacist should be the one to have the knowledge of content, dosage, use, and precautions in order to protect his community. He should also be fully aware of all laws which pertain to his business and especially the professional part of his business so that he can intelligently explain them to others when and if necessary. While there may be a slight cost or inconvenience to the store personnel to obtain and maintain such a collection of ready data, the satisfaction provided to the medical men and indirectly to their patients can be far greater as an addition to the total welfare of the community. A further satis-

(Continued on next page)

Economic Aspects

• • • • • • • • • *from preceding page*

faction, if practiced correctly, involves the drug store as a dispenser of health information directly to the consumer through store contacts and/or instructive advertising.

Service and Knowledge

(4) Intelligent selling service based upon a sound background in product knowledge and constructive sales training can never be measured in dollar values. For this reason a high quality sales person is always underpaid even though he may be receiving a top salary in relation to his productive capacity through the cash register. The combination of the desirable factors to make store personnel presentable, personable, and salable to the customer can produce customer satisfaction and tolerance which may mean the difference between success and failure in situations where competition tends to equalize the more standard drug store services. The effects of cheerful greeting, a correct mental picture of customer desires, an intelligent explanation of product usage and other vital information, and a happy parting remark are as capable of increasing the total welfare of the community as is the dollar sale of a piece of merchandise. This by no means rules out the element of self-service. It may be more to the customer's total satisfaction to permit him the freedom of personal selection for items which are generally purchased as everyday needs. There are, however, many instances when service is required even in a basically self-selection, merchandising organization. Here it is the good judgment of trained personnel to know when and to what extent their services and assistance are necessary to maintain the highest degree of customer satisfaction.

Customer Confidence

(5) Customer confidence ranks high with other non-measurable satisfactions enjoyed by the community and the pharmacist, and it also ranks high among the factors by which a community judges a business and permits it to continue. The values of a prescription and the accessories to administer it are too often thought of as cash-register recordings. There is, in many cases, a greater value to the satisfaction and confidence that the prescription is compounded exactly as written and needed, without substitution, and that the accessories are exactly the correct type and size. Confidence is also increased when the customer knows he will be sold only the items necessary to do the best job. Too often a great deal of confidence is destroyed by an attempt to over-sell or over-charge depending upon the seriousness of the situation or the financial ability of the customer. While such actions may increase the income, they may also constitute an actual decrease in economic as well as total welfare. All will agree that a drug store and its owner can benefit volume-wise from customer confidence. However, the benefit of being able to trust a pharmacist's judgment, from the sale of a life-giving prescription to the suggestion of a proper toy for a two-year old child, may add more to the total welfare of the community and the profession of pharmacy than the actual value of the entire business.

The Prestige Factor

(6) Prestige is perhaps as time-worn a factor as exists in drug store operation. Benefits from confidence accrue to the community, whereas benefits from prestige of person and business accrue to the owner. An attempt was made in the first analysis to show that oftentimes a new store may add little or nothing to the national income, may make a net addition or subtraction to economic welfare, and as regards the owner may produce a net monetary gain in as many as eighty-seven per cent of the stores. It remains to add or subtract the non-economic factors which directly affect the owner's welfare.

Additions accruing to the owner are mainly those involving prestige: (*a*) as an independent owner of a business; (*b*) as a professional person; (*c*) as a dispenser of life-giving medicine; (*d*) as a member of the Chamber of Commerce or other business clubs; (*e*) as a member or officer in local, state, and national pharmacy organizations; (*f*) as a leader in civic affairs—to name only a few.

The Negative Side of Ownership

Dissatisfactions or subtractions from the owner's welfare may be listed as: (*a*) long hours in the store, with the mental and physical strain involved; (*b*) lack of sufficient time at home with his family and friends; (*c*) constant pressures from personnel problems, tax worries, increasing expenses, and modern merchandising methods;

(*Continued on page 242*)

He Held On All Night

OUT OF THE SPRING NIGHT, the Red banzai attack hit like a thunderstorm. The darkness exploded into a nightmare. But Sergeant Wilson went into action at once, rallying his hard-pressed men.

Bullets disabled both his arms. Refusing aid, he crawled, bleeding, from man to man, supplying ammunition, directing fire, helping the wounded.

As the attack grew fiercer, a mortar shell blew him off his feet. Still, dazed and weakened, he held on, leading the fight all night till the last Red assault was beaten off. At dawn, by sheer courage, the Sergeant had saved not only his position, but the precious lives of his men.

"In Korea," says Sergeant Wilson, "I didn't think about where our weapons came from—I just thanked God they were there.

"Now, back home, I realize what's behind those arms. The united strength of millions of thrifty, hard-working folks like you—who are making America safer by investing in United States Defense Bonds."

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Economic Aspects

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(*d*) buying and selling problems in general; (*e*) dispensing problems; (*f*) accounting difficulties; (*g*) store and building maintenance; and (*h*) the increasing legal controls imposed by modern society. Economic matters can be assumed as parts of the above stated problems and pressures, because the satisfaction or dissatisfaction derived is often many times greater than the amount of money needed to produce the desired results.

American economy is built around the proposition of free enterprise and competition. It holds out the welcome to any man to go into business for himself wherever he may choose and to whatever extent his personal fortunes or credit may permit. This does not mean that the system of free enterprise holds out a guaranty that every business will succeed, nor is it a guarantor that every undesirable business will fail at the outset. It is to be desired today, while the economy of the nation is on a high level and a "business of my own" attitude is easy to acquire, that the pharmacist who contemplates a new store make an analysis more comprehensive than financial angles and data. Perhaps it would not harm some of today's drug store owners, who, in spite of the high level of competition and economy, are operating at the margin of competition, to review their operations with a critical analysis of all economic and non-economic factors.

Society is tolerant to some extent and is generally slow to move. Nevertheless, there is always the demand by society that its elements provide a net gain to the total welfare. As a rule the stores which show a desirable prosperity meet the demand sufficiently well to maintain a competitive position. Those stores which seem to be slipping may be doing so for reasons of too much customer inconvenience, a location which does not fit into the customers' routines, lack of confidence, or personal disinterest or dissatisfaction.

Although the non-economic aspects of total welfare cannot be measured in dollars and cents, they may be the satisfactions which assure success to owners who recognize their values. Likewise they may be the dissatisfactions which ultimately assure failure to owners who neglect their importance. The first and foremost of preownership questions should be: *"What will I be able to offer to increase the total welfare of the community as a whole and my customers in particular?"*

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Cellulose Ethers

• • • • • • • • • • • • *from page 220*

400, and glycerin—then the glycol ester was added. The use of these levigating agents did not give satisfactory results. Since neither method was successful the suspensions were prepared using only the suspending agent under consideration *and* exercising caution to prevent air incorporation.

Discussion

It has been observed (2) that (*a*) the particle size of the suspended material, (*b*) the viscosity of the suspending media, and (*c*) the method of preparation of the suspension are important factors determining the stability of the suspension. These observations have been upheld in this study:

a. Zinc oxide was more easily suspended than the sulfur due to its smaller particle size.

b. The successful suspending agents had the property of increasing the viscosity of the suspending media.

c. When preparing sulfur suspensions it is desirable to avoid the incorporation of air. Entrapped air produces flotation with some suspending agents (methyl cellulose in aqueous media) and gives the illusion of 100 per cent suspension of the sulfur with others (the polyethylene glycol stearates in aqueous media).

Polyethylene glycol 400 monostearate and distearate *both* exhibited excellent suspending properties for zinc oxide in aqueous media. The *mono*stearate is preferred for practical use because the *di*stearate will not remain dispersed at room temperature.

The advantages of the synthetic agents studied over tragacanth (the gum control) are:

1. The cellulose ethers are effective in 50 per cent alcohol. Tragacanth will not swell in over 35 per cent alcohol.

2. The polyethylene glycol esters in aqueous media exhibited equal and greater suspending power than tragacanth. Their "feel" on application to the skin is smooth and not gummy as is a tragacanth lotion.

Conclusions

1. Zinc oxide and sulfur require different types of suspending agents in aqueous media.

2. The cellulose derivatives exhibit excellent suspending properties in 50 per cent alcohol although they are selective in their action on sulfur and zinc oxide.

a. 0.5 per cent CMC hi is recommended as a suspending agent for sulfur preparations. It acts as an efficient suspending agent in aqueous or hydro-alcoholic media.

b. HEC med, HEC med hi, and CMC med exhibit excellent suspending properties in 50 per cent alcohol for sulfur *or* zinc oxide.

c. MC 400 and MC 4000 exhibit good suspending properties in 50 per cent alcohol for zinc oxide.

3. 2 per cent PEG 400 MS gives 100 per cent suspension of zinc oxide in aqueous media.

4. Because of their solubility in alcohol the polyethylene glycol stearates are not recommended as suspending agents for use in hydro-alcoholic vehicles.

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Tragacanth

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Schmitz and Hill (1) reported that the addition of 0.2 Gm. of sodium acid phosphate or 0.1 Gm. of trisodium phosphate to 5 Gm. of bismuth subnitrate and enough 1 per cent tragacanth mucilage to make 60 cc. prevented the caking. To check this report, and to see if other salts would prevent the jelling, different salts in varying concentrations were added to the mixture. Some of those tested could not be used in medicine, for example sodium arsenate, but were tried to see if they would prevent the jelling in order to secure data of value in theoretical interpretations.

The stabilizing agent was dissolved in 10 cc. of distilled water and the bismuth subnitrate added. After mixing well, the mixture was placed in a 2-oz. prescription bottle and the 1 per cent tragacanth mucilage added. Vigorous shaking produced a uniform suspension, except in the control. Here a grainy separation appeared almost immediately with the better grades of gum. With the poorer grades of gum the grainy separation was delayed or did not appear at all.

The following were found effective in controlling the jelling in concentrations of 50 mg. per 60 cc. of suspension: sodium phosphate, trisodium phosphate, sodium citrate, and sodium arsenate. The following were ineffective in controlling the jelling in concentrations up to 1 Gm. per 60 cc.: sodium chloride, sodium bicarbonate, sodium bisphosphate, sodium sulfate, barium chloride and aluminum sulfate. Sodium citrate was effective in the lowest concentration—10 mg. per 60 cc.

These results showed that trivalent negative ions were most effective in controlling the jelling. Divalent negative ions were more effective than univalent negative ions. Aluminum sulfate, in concentrations up to 200 mg. in 60 cc., caused a more rapid jelling than tragacanth mucilage and bismuth subnitrate alone.

In order to see if the stabilizing effect of the electrolyte was due to a change in pH, the pH of various jelled and unjelled tragacanth-bismuth subnitrate suspensions was determined by means of a Beckman pH Meter. The pH varied from 1.9 to 8.5. No direct relationship between pH and jelling could be observed.

It was thought that the stabilizing agent acted by being adsorbed on the negatively charged tragacanth micelle. Schmitz and Hill (1) reported that 72.5 per cent of 0.2 Gm. of sodium biphosphate in 60 cc. was adsorbed on the tragacanth. If this is the correct theory of action, it follows that adding the stabilizing agent to the tragacanth should afford greater protection than if added to the bismuth subnitrate before mixing. Experiments were conducted and it was found that if the mixtures were allowed to stand for ten days, no effect could be detected for various orders of mixing the ingredients.

Discussion of Results

Tragacanth-Bismuth Subnitrate Incompatibility —— It appears that the stability of a lyophilic sol in water is determined by two factors. These factors are the layer of water molecules (hydration) and the electric charge. If the water molecules are removed, then oppositely charged ions can neutralize the charge and cause precipitation to occur. On the other hand, when the electric charge is neutral, as at the isoelectric point, precipitation can be brought about by the addition of small amounts of alcohol or acetone, which remove the layer of water molecules.

Dean (5) states that nearly all lyophilic colloids are stabilized by the presence of attached or strongly adsorbed ions. The mechanism of stabilization is electrical and the sols can be precipitated by electrolytes.

In 1936, Henkel and Cie (6) obtained a patent on the stabilization of colloids by the addition of small amounts of alkali polyphosphates.

There is evidence that the transition from sol to gel, and the reverse, takes place gradually. This suggests that there is no essential difference in the structure of sols and gels. The view widely held at the present time is that in the course of gelation the particles of sol gradually unite to form short chains or threads; these become interlocked, so that the viscosity increases and eventually a semi-solid is formed (7). Part of the dispersion medium may exist as water of hydration of the chains of particles, but the major portion is believed held by capillary forces between the threads.

It was suggested that the incompatibility between tragacanth and bismuth subnitrate was due to the positively charged bismuth ion (1). It is thought that the positively charged ion causes a rearrangement of the tragacanth micelles, forming a gel. The nitrate ion ap-

(Continued on page 248)

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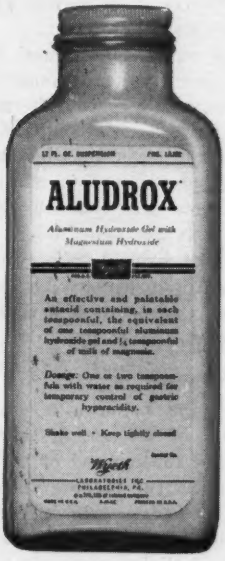
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Tragacanth

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pears to be so feebly adsorbed by the tragacanth micelle that little or no protection is afforded from the bismuth ion. As reported by Schmitz and Hill (1), the addition of trisodium phosphate stabilized the mixture by furnishing negative ions which were sufficiently adsorbed by the tragacanth to protect it from the positive bismuth ions.

Bismuth subcarbonate and bismuth subgallate apparently do not ionize sufficiently to liberate enough free bismuth ions to cause a jelling as there is no incompatibility between these salts and tragacanth mucilage

The trivalent ions, i.e., citrate, phosphate and arsenate, appear to be adsorbed in greatest concentrations and hence afford greatest protection. The divalent sulfate ion was next in stabilizing the mixture. The univalent ion was so feebly adsorbed that very little protection was given.

Authors' Summary

A study was made of several methods of preparation of tragacanth mucilage. Using ribbon gum, the method of the U.S.P. gives best results in the preparation of 1 per cent tragacanth mucilage. A maceration period of 24 hours is required for all methods using ribbon gum. A slightly more viscous mucilage is obtained from ribbon gum than from powdered gum as the heat used or generated in powdering the gum partially destroys the viscosity and suspending power of the gum.

In order to prepare 1 per cent tragacanth mucilage extemporaneously, powdered gum must be used. The use of either alcohol or glycerin to wet the gum before adding the water greatly facilitates the preparation of the mucilage. Alcohol appears to be the better agent for this purpose.

For quantities of mucilage up to 250 Gm., the use of a mortar and pestle is advantageous. For quantities of mucilage over 250 Gm. an automatic mixer of the soda fountain type gives excellent results and is very convenient.

The viscosity and suspending power of tragacanth mucilage vary greatly with the grade of gum. There are several grades of gum on the market which meet U.S.P. requirements but vary widely in suspending power.

Alcohol, in concentrations up to 40 per cent, increases the suspending power of tragacanth mucilage. However, at the higher concentrations, the nature of the mucilage is altered.

The incompatibility between tragacanth and bismuth subnitrate appears to be due to the action of the positively charged bismuth ion on the tragacanth micelle. This action can be controlled by the addition of certain electrolytes, notably alkali salts of trivalent negative ions.

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New and Nonofficial Remedies, 1952, xxxix.

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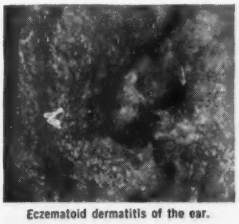

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STUDENT BRANCHES

The new officers of the **University of Florida Student Branch** are: George Dunson, president; Ralph Cognac, vice-president; John Brandon, secretary; and William Davenport, treasurer.

At a joint meeting of the **University of California College of Pharmacy Student Branch** of the A.PH.A. and the Northern California Pharmaceutical Association held in March, a discussion of the apprenticeship system in pharmacy was given by three students. Franklin Woo, Joseph Evers and Robert McPeak spoke on apprenticeship from the point of view of the educator, the student and the pharmacy owner, respectively.

Leland McNeill recently was elected president of the **Drake University Student Branch.** Other officers of the Branch are: Jim Oxnam, vice-president; Mrs. Robert L. Watts, secretary; and Dean Green, treasurer.

Mr. James Merritt, executive secretary of the Ohio State Pharmaceutical Association, and Mr. Vincent DeFelice, an attorney for the Department of Agriculture, lead a discussion on the possible revision of the Uniform Ohio Drug and Cosmetic Code at the March meeting of the **Ohio State University Student Branch.** The following officers were elected at this meeting: LeMont Kier, president; Kenneth Spoon, president-elect; Albert Powell, vice-president; Judy Bargdill, secretary; and Don Discher, treasurer.

The Loyola University Student Branch held a joint meeting on March 17 with the Ladies' Auxiliary of the Louisiana State Pharmaceutical Association. Book awards were made to George Hall, Ola Morgan, Yvette Ortiz and June Conravey Kissingin for achieving the highest scholastic averages in their respective classes.

Southwestern State College (Okla.) Student Branch, held a meeting on February 3. Mr. Robert Vick, new pharmacy professor from the University of Mississippi, spoke on "The Effect of Nitrates and Nitrites as Vasoconstrictors."

LOCAL BRANCHES

Dr. Hugo H. Schaefer served as moderator of a panel dealing with "Brand Substitution and Duplication" at the March 9 meeting of the **New York Branch** of the A.PH.A. More than 250 were in attendance. Mr. Carl K. Raiser, sales manager of the Smith, Kline & French Laboratories, spoke from the manufacturers' point of view, and claimed that the element of competition must also be considered. Mr. Harry Goldstein, editor of the Journal of the Consolidated Brooklyn Retail Pharmacists Association, presented the viewpoint of the retail pharmacist in which he questioned the desirability of the many duplications which must be stocked by the retail pharmacist and represents a tremendous loss of working capital. Mr. Emil Greenberg, general counsel to the New York State Pharmaceutical Association, effectively summarized the legal aspects of substitution, citing the dearth of legal precedent and absence of cases on this particular subject.

The New York Branch held their April 13 meeting at Fordham University College of Pharmacy. Dr. Martin B. Donaldson, assistant director, Professional Services, Lederle Laboratories, spoke on "Professional Services of a Pharmaceutical House."

On March 11 the **Philadelphia Branch** held an Interprofessional Relations meeting with the County Medical Association. Dr. Frank E. Adair, nationally known authority on cancer, presented the topic "Newer Concepts of Cancer Therapy."

Mr. Herbert E. Ashby, regional sales manager of Mead Johnson & Company, spoke on "Infant Feeding, Merchandising of Infant Food Products, and the Establishment of Baby Departments in Retail Drug Sores" at the March 12 meeting of the **Baltimore Branch.**

On April 9 a meeting of the Branch was held.

(Continued on page 252)

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A.PH.A. Branches

• • • • • • • • • • • • • *from page 250*

Mr. G. F. Cheston from Smith, Kline & French Laboratories talked on "The Prescription Substitution Problem."

A meeting is scheduled for May 14 at 8:30 p.m. and Dr. Mark Welsh, director of the Animal Industry Section of Lederle Laboratories, will speak on "What is New in Veterinary Medicine."

Dr. Orville Miller presided at the February 20 meeting of the **Greater Los Angeles Branch** of the A.PH.A. which was held at the University of Southern California. "Blood Fractions, Productions & Uses" was the subject presented by the guest speaker, Dr. John Palmer.

The Michigan Branch of the A.PH.A. presented the annual McCabe Award Program on March 31. Students representing three Michigan colleges of pharmacy presented papers in competition for cash prizes. Representing Detroit Institute of Technology, College of Pharmacy, was Mr. Neil L. Brown, whose topic was "Compounding My Future." University of Michigan, College of Pharmacy student, Mr. Henry J. Pryzbek, talked on "Pharmacy is More than a Profession—It's a Business Too." Mr. Edwin C. Blumberg, who represented Wayne University, College of Pharmacy, presented the subject "Opportunities—Unlimited." First prize was won by Mr. Brown; second, by Mr. Pryzbek; and third, by Mr. Blumberg.

Recently elected officers of the **Michigan Branch** are: Gordon F. Goyette, Jr., president; Donald Meredith, vice-president; Mrs. Jane L. Rogan, secretary; and Lillian Russell, treasurer.

Dr. Frank F. A. Rawling, president-elect of the Academy of Medicine of Toledo and Lucas County, was guest speaker at the March 25 meeting of the **Northwestern Ohio Branch,** and discussed the subject, "Allergies in Our Everyday Life."

The Branch will hold its Annual Banquet and dinner dance on Thursday, June 4, at the Maumee River Yacht Club.

At the February 25 meeting of the **Northwestern Ohio Branch,** Dr. Elmer Haynes, director of the Toledo Alcoholic Clinic, spoke on the subject, "Treatment of Alcoholics."

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Straight from Headquarters

• • • • • • • • • • • • *from page 213*

The Office of Defense Mobilization has made state health officers responsible for developing allocation plans to fill the needs of the respective states for gamma globulin based on a pattern formulated by the National Research Council.

This is, of course, a temporary procedure intended to tide us over the period during which gamma globulin is in scarce supply, on the theory that infantile paralysis will develop in 1953 to the extent that it has in recent years.

Nowhere in this procedure is there any appearance of a desire on the part of any of these agencies to interfere with normal commerce in drugs. Both the American Red Cross and the National Foundation for Infantile Paralysis are guided by persons who are firm believers in the American system of free enterprise. The Office of Defense Mobilization and the National Research Council have given no indication of any interest other than the proper allocation and distribution of gamma globulin in a manner to supply the greatest good to the greatest number. The Public Health Service, which is a part of the Department of Health, Education, and Welfare, is the logical distribution agency, through its Division of Civilian Health Requirements, to the health officers of the various states.

The individual physician who wishes to use gamma globulin in polio prevention will be supplied in accordance with a formula based on the incidence of the disease and the cases at hand.

We are sure that the drug industry and the profession of pharmacy will agree that private interests under these circumstances are secondary to the public welfare.

It now becomes the duty of state and local pharmaceutical association officials to contact health officers and offer their cooperation in making the program of allocation and distribution of gamma globulin work out as smoothly and as satisfactorily as possible for all concerned.

There is an educational program in connection with this procedure which should be given immediate attention, and this is where the pharmacist can make a real contribution because statistics show that some member of every family in the United States visits a pharmacy at least once or twice a week. The health education potential of the community pharmacy is higher than that of any other professional agency in the health field, and health officers are well aware of the aid they have received from the pharmacists of the United States in their campaigns to alert the public to the dangers of cancer, heart disease, venereal diseases, diabetes, and other ailments.

They can certainly count on the pharmacists of the nation to assist in the program now being formulated to combat poliomyelitis.

We wish to stress here, as we have in connection with other matters, the importance of state and local responsibility and we should recognize above all whose blood is being processed to make available the possible escape from the crippling effects of a disease which has not yet been conquered, but which may soon be expected to succumb to the persistent research and cooperative team work of the health professions.

Contact with Physicians

FROM time to time we receive requests from our members for ideas and procedures with which to impress the medical profession with their prescription service. Obviously, the things that impress physicians with prescription and other pharmaceutical service supplied by a pharmacist include such basic factors as a well-equipped prescription laboratory; a library of recent texts on pharmacology, pharmaceutical chemistry, and pharmacy; a conference room where the physician can discuss some pharmaceutical problem with the pharmacist; and a file of literature on the latest prescription products offered in finished dosage forms.

However, there are many physicians who expect an occasional visit from the pharmacist, or some communication from him as to availability of recently launched new drugs. To meet this professional responsibility, the pharmacist who has a knack for good letter-writing does well to communicate periodically with the physicians in his neighborhood; but in the absence of contact by letter, some form of publication to the physician issued at regular intervals will suffice. Such a service is now available as can be gleaned from announcements in the advertising pages of this and other pharmaceutical publications.

BRIEFLY NOTED

COLLEGES

Seven students are enrolled in the graduate program of the **St. Louis College of Pharmacy and Allied Sciences** specializing in Industrial Pharmacy. One of the students is from Iran, another from Pakistan.

The Women's Club of the **Columbia University** College of Pharmacy sponsored a luncheon and fashion show in the Sert Room of the Waldorf-Astoria, New York, on Thursday, April 16, at 12 noon. The proceeds will be given to the Building Fund of the Columbia College of Pharmacy. The Fashion Show was presented by Gunther-Jaeckel to the music of Ben Cutler.

Imo Knox Meyer, **University of Texas** student from Cleburne, is the recipient of the first master's degree with specialization in pharmacology awarded at the University. Mr. Meyer was formerly a member of the University of Texas Student Branch of the A.PH.A., but has recently been transferred to active status.

Butler University sponsored a two-day Seminar on Modern Pharmacy at the Indianapolis campus March 24 and 25. Dr. Robert L. Swain, Editor of *Drug Topics*, addressed the Seminar on Tuesday afternoon, March 24, on the subject, "The Pharmacist and the Law." Later, he served as moderator for a panel discussion on Interprofessional Relations held on the second day of the conference. Mr. Bert Mull, director of trade relations of Eli Lilly and Co., delivered the keynote address of the Seminar. His subject was "Current Trends," in which he presented newly developed facts of concern to pharmacists.

The University of Pittsburgh School of Pharmacy will present graduate courses in Pharmacy Administration during the 1953 summer session. Two types of courses will be offered: comprehensive courses in retailing, drug marketing and advanced drug store management; and specialized courses in selling and advertising drug products. In the pre-summer session, a specialized course in applied salesmanship, called Selling Drug Products, will be presented. The post-summer session offers Advertising Drug Products.

HOSPITAL PHARMACY

The Policy Committee of the **Division of Hospital Pharmacy** met in Chicago on January 25 with all members present, representing the AMERICAN PHARMACEUTICAL ASSOCIATION, the American Society of Hospital Pharmacists, the American Hospital Association and the Catholic Hospital Association. First consideration on the agenda was the present status of the training programs in hospital pharmacy with particular reference to the Proposed Standard for Internships which were originally worked out by a Committee of the A.S.H.P., approved by the Society, and referred to the Division for further study.

Consideration was also given to the hospital pharmacists' approach to the problem of the relation of hospitals to private practitioners in supplying pharmacy service to hospital and ambulatory patients. Further implementation of the Minimum Standard and a discussion of the Proposed Point-Rating Plan, as well as other subjects, were covered.

The **Tri-State Council of Hospital Pharmacists** convened in conjunction with the New England Hospital Assembly at Hotel Statler in Boston on March 23. The Tri-State Council is composed of three affiliated chapters of the American Society of Hospital Pharmacists —Massachusetts, Rhode Island and Connecticut—and representatives of each participated in the program.

The **Southeastern Society of Hospital Pharmacists** held its annual meeting in conjunction with the Southeastern Hospital Conference in New Orleans, April 8–10. Grover C. Bowles, president of the A.S.H.P., represented hospital pharmacists in a meeting for administrators.

The AMERICAN PHARMACEUTICAL ASSOCIATION and the **American Society of Hospital Pharmacists** will again cooperate in sponsoring two Institutes during the current year. **The Catholic Hospital Association's Institute** will be held in Kansas City, May 23–27 in conjunction with the Association's annual convention. Discussions will cover Professional and Administrative Policies Governing the Pharmacy Service; The Internship Program; Pharmacology of New Drugs; Legislation; and Remodeling Problems. The Program is in charge of the C.H.A. Committee on Hospital Pharmacy Practice.

Loyola University of Los Angeles will be the site for the 1953 Institute held under the auspices of the **American Hospital Association.** The program includes discussions on Hospital Pharmacy Administration; Pharmaceutical Aspects of Production, and Utilization of Currently Important Drugs; Professional Problems; and Current Trends in Pharmacology and Therapeutics. A.S.H.P. President Grover C. Bowles is chairman of the Planning Committee which includes representatives from the various sponsoring organizations and the local chapter.

National Hospital Week will be observed during the week of May 10. These seven days, which include the birthday of Florence Nightingale on May 12, are dedicated to the spirit of goodwill and understanding. Traditionally, this observance has been a time to bring citizens of the community into the hospital and stimulate their interest in how it operates and what its service means to them.

Dr. Don E. Francke, chief pharmacist, University Hospital, Ann Arbor, Mich., has been named recipient of the 1953 H.A.K. Whitney Lecture Award presented by the **Michigan Society of Hospital Pharmacists.** Presentation of the award will be made at a Testimonial Dinner to be held May 7 at the Detroit-Leland Hotel, Detroit, Mich.

This Award, established in honor of the first chairman of the Society, is presented annually to an individual who has made significant contributions to the practice of hospital pharmacy. Dr. Francke is recognized not only for his many contributions to hospital pharmacy but also for his interest in all phases of the profession. He is a past-president of the A.PH.A. and is presently serving on the Association's Council.

E. N. Beesley Succeeds J. K. Lilly As President of Eli Lilly & Co.

E. N. Beesley

E. N. Beesley was named president of Eli Lilly & Company by the Board of Directors at a meeting held on April 7. Mr. Beesley succeeds J. K. Lilly, who was advanced to the position of vice-chairman of the Board. F. M. Hadley was appointed executive vice-president, the position formerly held by Mr. Beesley. He will also serve as a member of the Board of Directors.

Retiring president J. K. Lilly was the fourth member of the family to serve as president. Mr. Beesley is the first executive, other than a member of the Lilly family, to fill that post. According to the announcement of the appointments, the realignment of executives culminates a series of organizational changes assigning additional executive responsibility to younger executives of the Company. Mr. Lilly became president in 1948, and during his term, Lilly activity in various fields has been expanded.

Mr. Beesley joined the Lilly Company twenty-fours years ago, at the age of twenty, following his graduation from college in 1929. He first worked as a sales representative in Toledo and Chicago, and in 1937 he became manager of the Cleveland sales district, and later managed the Indianapolis sales district. In 1941 he was named head of the trade relations department at the Lilly Company's Indianapolis headquarters. Since then he has served the firm in numerous positions, as director of personnel relations, associate director of sales, and vice-president of executive administration. He was named executive vice-president of the Company in 1952.

Mr. Beesley was one of the participants in the AMERICAN PHARMACEUTICAL ASSOCIATION'S Founder's Day Symposium on Intra- and Inter-Professional Relations, held October 7, 1952, in Washington. Mr. Beesley's address, on the responsibility of the manufacturer, was reprinted in the February, 1953, issue of THIS JOURNAL.

Mr. Hadley, forty-five, also started with the Lilly Company twenty-four years ago, as assistant cashier. In 1946 he was named director of the General Accounting Division, and in 1948, treasurer. In 1952 he was named assistant executive vice-president.

Mental Health

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out campaigns to dispel false notions about mental illness by utilizing radio, television, newspapers and magazines to tell people the truth.

Education in mental health is of vital importance, and public knowledge is being increased by the use of dramatic sketches for presentation by community groups, and by films and film strips designed for church, club and school showings and discussion. To these are added the distribution of publications which tell people how they can apply the basic principles of good mental health in their own lives.

These voluntary organizations are examining the laws which govern the hospitalization of the mentally ill and urging improved hospital legislation and more humane treatment of the victims of mental illness.

Through the efforts of these organizations, ministers, teachers, recreation leaders and others whose work brings them closely in contact with emotional problems are being urged to seek opportunities for special instruction and orientation in mental health guidance. In this way, they become able to recognize these problems before serious illness develops and the troubled person becomes a mental patient.

Another area of voluntary mental health organization work is helping the community to educate citizens to new concepts which will facilitate the rehabilitation of patients who have been released from mental hospitals. This can be done by finding comfortable living quarters, providing suitable employment, and breaking down the old attitudes of fear and distrust which so often in the past have prevented an ex-patient's return to normal community life.

But more communities must provide themselves with adequate mental health facilities and concentrate their efforts on mental health education and the prevention of severe mental illness. This is particularly important in these times of shortage when we must train more mental health personnel in order to give adequate care to the many who are already suffering from mental illness and expand hospital and research programs to meet present needs.

Knowledge of the availability of such assistance in emergency can aid immeasurably in community planning. Since the pharmacist, with his own investment in the community, participates in civic activities to his own advantage, as well as to the advantage of the community as a whole, it is highly appropriate that he be well informed on matters which affect his business and his life, as these things assuredly do.

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American Foundation for Pharmaceutical Education Holds Eleventh Annual Meeting

Dr. Robert L. Swain, editor of *Drug Topics* and *Drug Trade News,* was elected to succeed Dr. H. A. B. Dunning as president of the American Foundation for Pharmaceutical Education at the Foundation's Eleventh Annual Meeting in New York on April 6. Other officers elected were: vice-president, James J. Kerrigan, president of Merck & Co., Inc.; treasurer, Howard B. Fonda, senior vice-president of Burroughs, Wellcome & Co. (U.S.A.), Inc.; counsel, James F. Hoge, of Rogers, Hoge & Hills; and secretary, W. Paul Briggs, former dean, George Washington University College of Pharmacy.

Re-elected as directors were Eli Lilly, chairman of the Board, Eli Lilly & Co.; Charles S. Beardsley, chairman of the Board, Miles Laboratories, Inc.; and J. Preston Levis, chairman of the Board, Owens-Illinois Glass Co.

Dr. Morris Fishbein, former editor, *Journal of the American Medical Association,* addressed the Annual Appreciation Luncheon, at the Biltmore, attended by about 100 patrons of the Foundation. Dr. Fishbein reviewed the progress in pharmaceutical education and the basic importance of pharmacy in the whole medical care picture. He complimented the American drug industry for its position of world leadership, and spoke of the priceless returns to mankind from our investments in education and research. He said: "The pharmaceutical industry in the United States is one of the largest and most important industries in the world, and it has conferred benefits to human life far beyond any other industry. It has given mankind freedom from fear and pain, and added greatly to the world's goods in production of food and clothing directly and, in fact, of everything else indirectly."

In his report as the retiring president of the Foundation, Dr. Dunning pointed to the progress that has been made in providing eligible faculty members for Colleges of Pharmacy and research scientists for the drug industry through the Foundation's fellowship program.

Dr. R. L. Swain, in his presidential address, cited the essentiality of the Foundation and its many constructive accomplishments in strengthening pharmaceutical education. He emphasized the need for recognition and support of the Foundation in a way that would enable it to operate in the same manner as other great educational foundations.

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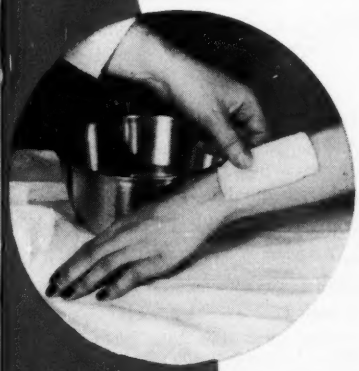

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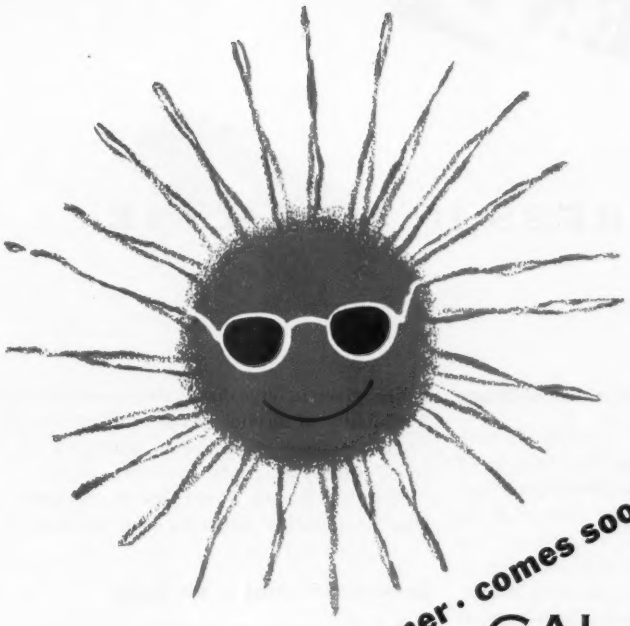

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RECENT

PROGRESS IN MEDICINE

"Blind Placebos" in the Evaluation of Drugs

The use of "blind placebos"—"blind" to both the subject and the investigator—has been urged by a prominent pharmaceutical investigator in a recent letter to the editor of the *Journal of the American Medical Association*. "There are two main reasons," he writes, "why it is necessary to employ the blind placebo in the accurate evaluation of a given therapeutic agent: (1) to prevent the tendency of the investigator to overlook the natural course of a given disease and (2) to rule out psychological factors on the part of both physician and patient." Data from five investigational reports involving administration of drugs and placebos to different patients afflicted with conditions including colds, angina, sore throats, and skin infection show that in some series the response to the drug and the placebos are very much alike. "There is a tendency for the investigator to look for the good in a drug if he is trying to discover a new cure . . . the blind placebo helps to overcome these (psychological) variables."

(Hailman, H. F., *J. A. M. A.*, **151:** 1430, April 18, 1953.)

Drugs and Stimulants in Coronary Disease

The value of certain drugs and alcoholic stimulants in dilating the arteries to relieve patients with coronary disease was the subject of a paper presented before the 26th Scientific Session of the American Heart Association in Atlantic City, April 11. To improve on previous methods of study, a new technique was used to observe the modifying action of the various agents on patients' responses to a standard exercise test, as recorded on the electrocardiograph. Most effective agent was found to be nitroglycerine, long used for artery-dilation purposes. Next best was Peritrate, a modification of nitroglycerine. Papaverine, given in large doses, also proved effective. The ability of alcohol to relieve pain in angina pectoris appears, according to these tests, to be based entirely on a sedative action.

(Henry I. Russek, Panel Discussion, American Heart Association, Hotel Chelsea, Atlantic City, N. J., April 11, 1953.)

Common Diseases of the Scalp

A variety of diseases affect the scalp, and proper recognition of the more common ones is an important part of general practice, according to a physician from the University of Virginia Medical School. Herpes zoster, tinia capitis, contact dermatitis are but a few of the conditions discussed, and illustrated, in a brief but lucid discussion of the problem. Effective treatment is given, with each method supported by reported clinical investigations.

(Cawley, E. P., *GP*, **7:** 34, March 1953.)

Penicillin and Terramycin Act to Offset Toxemias of Pregnancy

Two Boston physicians have found that penicillin and terramycin both act to offset the symptoms of toxemias in pregnancy. After treating 13 pregnant women with the two antibiotics, the physicians reported, "The beneficial effects of these antibiotics in toxemia appear to be due to neutralization (or elimination) of circulating toxin and to be limited to the mother." However, the doctors do not believe that the symptoms of the disease, i.e., edema or swelling of the legs, high blood pressure, headaches, are produced by bacteria, but rather do they ascribe the mother's toxic condition to poisons released from the uterus. Injections of menstrual toxins into rats has produced symptoms closely resembling those of

(Continued on page 264)

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Progress in Medicine

• • • • • • • • • • • • *from page 262*

pregnancy toxemias, and these symptoms were eliminated by dosing the rats with the antibiotics. The study is a continuation of a previous series first reported in June 1952 by a different team of investigators.

(Smith, G. V., and Reid, D. E., *Am. J. Obst. & Gynec.*, **1**: 302, March 1953.)

Re-Infection Stopped by Treatment of Entire Family

Recognition of family infections and treatment of the entire family, including those not sick, ostensibly offers the best hope for the management and prevention of repeated infections, according to an associate of the Division of Pediatrics, University of California School of Medicine. He reached this conclusion after a review of the patients he had seen within a year's time.

"It is no wonder," the physician writes, "that such a family reservoir is so frequently present in childhood infections. The great intimacy of family contact predisposes to repeated and massive exposure of a susceptible family member to a carrier whom he sees, frequently touches and kisses day in and day out." The most important of the bacterial pathogens, which are carried back and forth in the family group and in which the family acts as a reservoir of repeated childhood infections, are those which affect the skin, intestinal tract, and respiratory system. They include infections caused by pneumococcus, influenza, streptococcus, staphylococcus, and Salmonella and Shigella bacteria.

In the past year the physician saw 48 family outbreaks of pneumococcic infection in which two or more members of the family were shown to be affected by the same type of pneumococcus. There was a striking variety of types of disease produced by a single pathogen in these family members. Another important factor was the fact that treatment and improvement of a single member did not solve the problem, because reinfection invariably occurred from a "healthy" carrier member in the family.

(Kempe, C. Henry, *J. A. M. A.*, **151**: 1472, April 25, 1953.)

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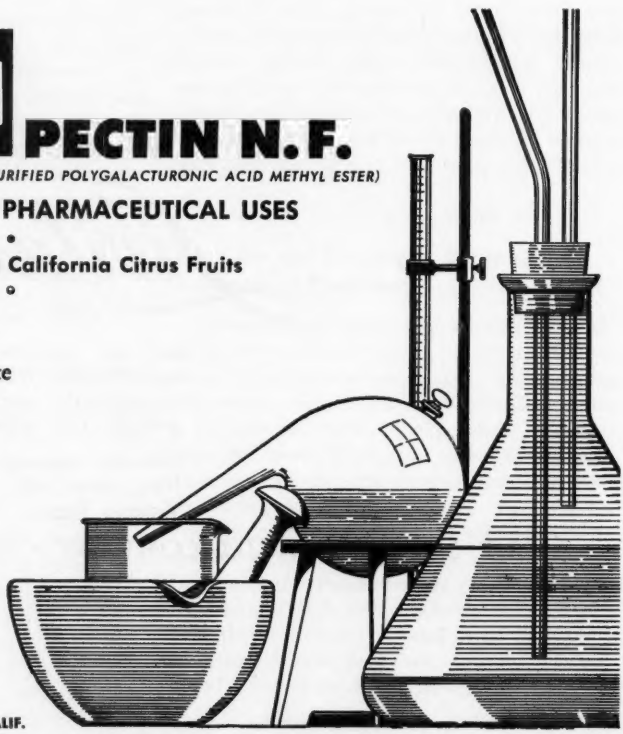

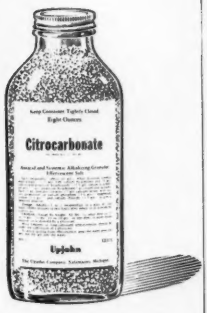

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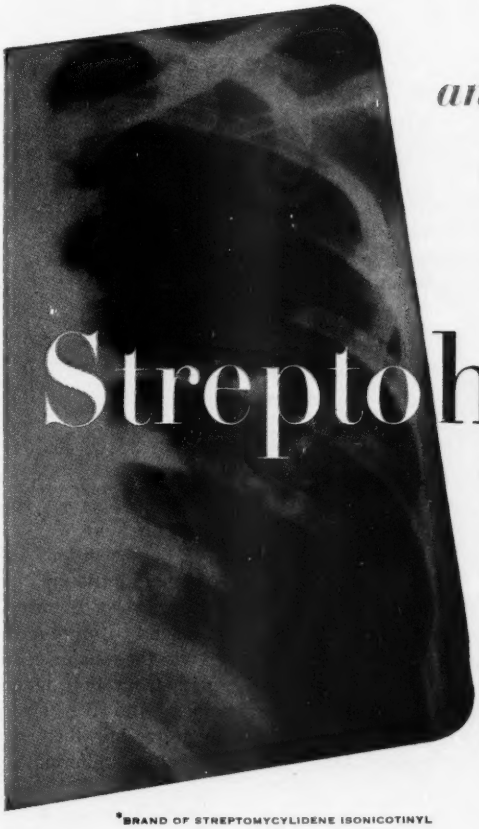

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Rx information service

CMC Formula

In the following prescription, glycerin is omitted at the request of the dermatologist. In compounding this formula, the zinc oxide shows up in the final product very clearly as white specks and gives the lotion a very inelegant appearance. Some of the powdered ochre also does not mix well and streaks upon application.—W. F. B., Canada.

Rx: CMC formula

Calamine	*32.0*
Zinc Oxide fluffy	*32.0*
Sodium CMC medium	*6.0*
Aerosol OT 10%	*2.6*
Distilled Water q.s. ad	*400.0*
Yellow and Red Ochre to color	

The following procedure should correct the lumping and streaking in your product:

Disperse the sodium CMC in the water in a mechanical mixer. Place a small portion of the zinc oxide in a porcelain or wedgewood mortar, add the yellow and red ochre and triturate until the color is uniform; then add the remainder of the zinc oxide gradually with trituration; then similarly add the calamine. Add the mixed powders to the liquid in the mixer, stir, then add the Aerosol OT solution. Mix until uniform.

Formula for Stabilizing White Lotion N.F.

It will be appreciated if you will advise as to your opinion on the following formula for stabilizing White Lotion, N.F.:

Cetyl Alcohol	*36.0—*	*Stabilizer*
Sodium Lauryl Sulfate	*4.0—*	
Water q.s. ad	*1000.0—*	

Dissolve each of the salts in 250 cc. of water and add the sulfurated potash solution to the $ZnSO_4$ solution; add 350 cc. of the cetyl alcohol stabilizer; finish as directed in the N.F.—R. D. S., New York

The suspension prepared by your formula appears to hold up fairly well. Aside from the fact that the product would not be the N.F. preparation and should not be designated as such, there would appear to be no pharmaceutical reason against using it.

You indicate that the modified formula was suggested by another hospital pharmacist. It would be wise to ask him if the dermatologists who have used it have found it satisfactory.

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and healing in
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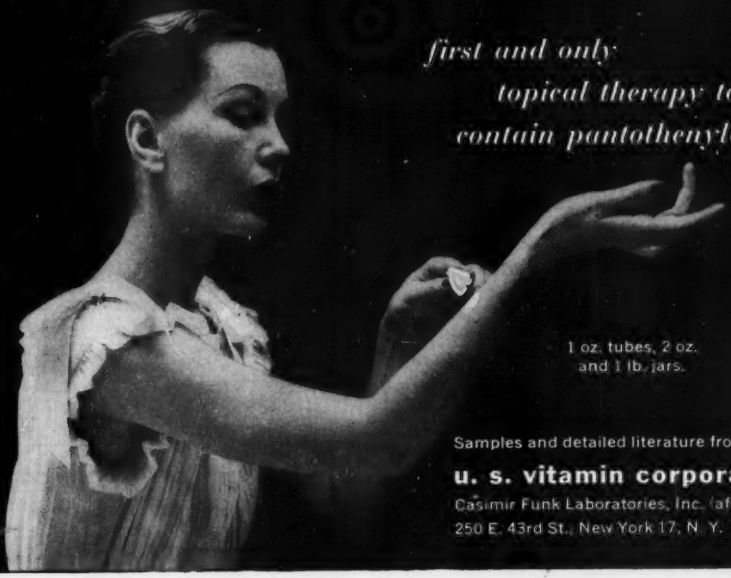

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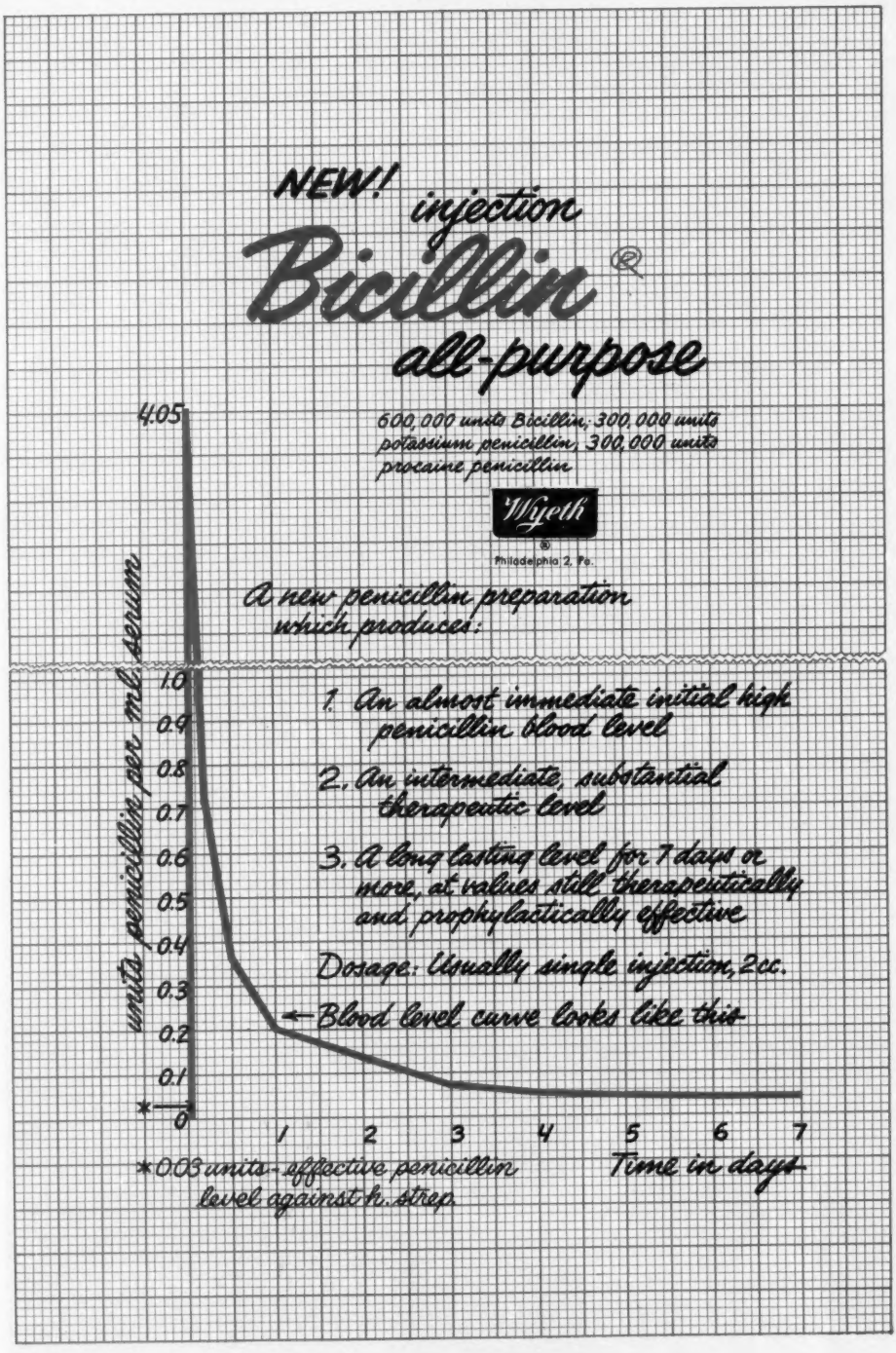
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← Blood level curve looks like this
Units penicillin per cc. whole blood
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1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
*
0
1
2
3
4
5
6
7
Time in days
*0.03 units - effective penicillin level against h. strep.

NEW PRESCRIPTION PRODUCTS

CANDETTES

Description: Each orange-flavored troche contains: polymyxin B, 1,000 units, and bacitracin, 50 units.

Indications: For control of superficial infections of the mouth and throat. Also recommended for prophylactic use after dental procedures.

Administration: As directed by physician or dentist.

Form Supplied: Boxes of 10 troches.

Source: Chas. Pfizer & Co., Inc., New York, N.Y.

DARAPRIM

Description: Each scored tablet contains 25 mg. of 2,4-diamino-5-*p*-chlorophenyl-6-ethylpyrimidine.

Indications: For use as an antimalarial.

Administration: Prophylaxis—25 mg. per week for persons entering malarious regions, and for populations of these regions during the malaria season. Therapy—for the acute attack, one or two doses of 50 mg. In vivax (benign tertian) malaria, this is followed by 25 mg. once weekly for 8 to 10 weeks to eradicate relapsing forms.

Form Supplied: Boxes of 30 and bottles of 1,000.

Source: Burroughs Wellcome & Co. (U.S.A.), Inc., Tuckahoe, N.Y.

DEPO-CER-O-CILLIN

Description: A water-insoluble, crystalline salt of penicillin O (allylmercapto-methyl penicillin). The addition of 4.2 cc. of sterile water for injection or sterile isotonic solution of sodium chloride provides 5 cc. of a suspension containing 300,000 units of Depo-Cer-O-Cillin per cc. The dry form is stable for 36 months at room temperature. Suspensions are stable at room temperature for one week and at refrigerator temperature for three weeks.

Indications: For the treatment of acute staphylococcic, streptococcic, and pneumococcic infections; bacteremia and gonorrhea.

Administration: Average dose is 300,000 units by intramuscular injection, or as directed by physician.

Form Supplied: Sterile vials, containing 1,500,000 units.

Source: The Upjohn Company, Kalamazoo, Mich.

EXPANDEX

Description: An isotonic solution containing 6 per cent of dextran.

Indications: For treatment of shock due to hemorrhage, burns, trauma, and surgery.

Administration: Average dose is one or two units (500 or 1,000 cc.); more may be given if necessary.

Form Supplied: Bottles of 500 cc.

Source: C.S.C. Pharmaceuticals, New York, N.Y.

FURADANTIN

Description: Tablets containing 50 mg. or 100 mg. of N-(5-nitro-2-furfurylidene)-1-aminohydantoin.

Indications: For treatment of urinary tract infections, including pyelonephritis, pyelitis, and cystitis.

Administration: As directed by physician.

Form Supplied: Bottles of 50 and 250 tablets.

Source: Eaton Laboratories, Inc., Norwich, N.Y.

LEVO-DROMORAN TARTRATE

Description: Each 1-cc. ampul and scored oral tablet contains 2 mg. of 3-hydroxy-N-methylmorphinan tartrate.

Indications: In cases requiring morphine-like sedation.

Administration: As directed by physician.

Form Supplied: Vials of 10 cc. and boxes of 25, 100, and 1,000 tablets.

Source: Hoffmann-La Roche, Inc., Nutley, N.J.

PAREPECTOLIN

Description: Each fluidounce contains: a stable colloidal suspension of paregoric (equivalent), 1 dram; pectolin, 2.5 gr.; kaolin specially purified, 85 gr.

Indications: For treatment of specific and nonspecific diarrheas, and relief of colic and abdominal tenderness.

Administration: For children: one to two teaspoonfuls three times daily. For adults: one to two tablespoonfuls three times daily.

Form Supplied: Bottles of 8 fl. oz.

Source: William H. Rorer, Inc., Philadelphia, Pa.

PLAVOLEX

Description: A 6 per cent solution of superrefined dextran. Stable under normal conditions; refrigeration not required.

Indications: To increase the fluid volume of the circulatory system, as in shock.

Administration: Intravenously, as prescribed by physician.

Form Supplied: Bottles of 500 cc.

Source: Wyeth Laboratories, Philadelphia, Pa.

(Continued on next page)

STREPTOHYDRAZID

Description: A chemical combination of 1 Gm. of streptomycin with 236 mg. of isoniazid.
Indications: For treatment of tuberculosis.
Administration: Intramuscular injection. Not more than two doses daily.
Form Supplied: Single dose vials to which 1.1 cc. or 2.1 cc. of sterile water is added.
Source: Chas. Pfizer & Co., Brooklyn, N.Y.

SURDON

Description: Each tablet contains: Progestoral (brand of ethisterone), 5 mg.; thiamine hydrochloride, 15 mg.; and phenobarbital, 15 mg.
Indications: For the treatment of dysmenorrhea and premenstrual tension.
Administration: Average dose is one or two tablets per day during the last seven to ten days of the menstrual cycle.
Form Supplied: Boxes of 30 tablets.
Source: Organon, Inc., Orange, N.J.

SUXALMID

Description: Each tablet contains: salicylamide, 5 gr.; calcium succinate, 1 gr.; potassium para-aminobenzoate, 4 gr.
Indications: For treatment of rheumatoid arthritis, rheumatic fever, gout, neuromuscular affections, and allied disorders.
Administration: Two tablets four times a day or as directed by the physician.
Form Supplied: Bottles of 100 and 1,000.
Source: Meyer Chemical Co., Detroit, Mich.

TETROBARBS

Description: Each capsule of Tetrophenobarb contains pentylenetetrazol, 150 mg., and phenobarbital sodium, 100 mg. Each capsule of Tetropentobarb contains pentylenetetrazol, 300 mg., and pentobarbital sodium, 100 mg. Each capsule of Tetrosecobarb contains pentylenetetrazol, 300 mg., and secobarbital sodium, 100 mg.
Indications: Where the barbiturate components would be prescribed. The combination with pentylenetetrazol, a central nervous system stimulant, is claimed to reduce "hangover" and to reduce the dangers of overdosage.
Administration: As directed by the physician.
Form Supplied: Clear and burgundy colored capsules of Tetrophenobarb, yellow and burgundy colored capsules of Tetropentobarb, and orange and burgundy colored capsules of Tetrosecobarb in packages of 24, 100, and 500.
Source: Strong Cobb & Company, Inc., Cleveland, Ohio.

Other New Products

LIQUID ANAHIST

Liquid Anahist has been recently introduced nationally by the *Anahist Company*. The cherry-flavored syrup, which includes 12.5 mg. of thonzylamine hydrochloride per teaspoonful, is recommended for relieving cold and hay fever symptoms of children and adults. It is supplied in bottles of 3 oz.

ANODYNOS-DHC TABLETS

Anodynos-DHC Tablets has been made available by *George A. Breon & Company*. The scored and mottled green tablets are an aspirin-acetophenitidin-caffeine combination with 5 mg. of dihydrocodeinone bitartrate added. It is indicated for relief of all types of cough, including that of tuberculosis. The product is supplied in bottles of 500 tablets.

BREDATIVE

Bredative has been introduced by *George A. Breon & Company*, as uncoated, pink-colored tablets containing sodium pentobarbital and phenobarbital. They are indicated for use in the relief of simple insomnia and for daytime sedation; other indications are epilepsy, migraine, neurotic disorders, chorea, vomiting during pregnancy, asthma, and pertussis. As a sedative, adult dosage is one tablet taken three times a day after meals, while one or two tablets before sleeping is usually sufficient as a hypnotic. Supplied in bottles of 1,000 tablets.

CARDALIN-PHEN

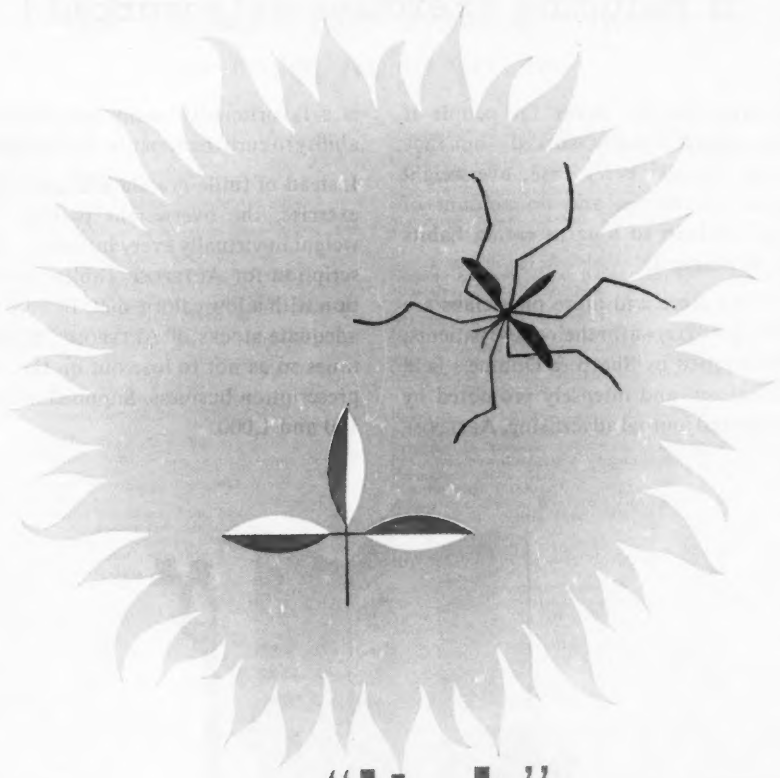
Cardalin-Phen has recently been marketed by *Irwin, Neisler and Company* as a companion product to Cardalin. Cardalin-Phen is a scored tablet containing: aminophylline, 5 gr.; aluminum hydroxide, 2.5 gr.; ethyl aminobenzoate, 0.5 gr.; and phenobarbital, 0.25 gr. It is designed for use wherever the parenteral, rectal, or oral administration of aminophylline or its modifications is indicated. Cardalin and Cardalin-Phen are supplied in bottles of 100, 500, and 1,000 tablets.

DUO-STREP

Merck & Co., Inc. has announced the availability of Duo-Strep, a mixed antibiotic product composed of equal percentages of crystalline dihydrostreptomycin and streptomycin sulfates. Duo-Strep is recommended for use in the treatment of tuberculosis in combination with paraaminosalicylic acid or other chemotherapeutic agents. The product is also indicated in the treatment of pneumonia caused by *Hemophilus influenzae*, tularemia, brucellosis with bacteremia, plague, and certain venereal diseases when the patient is known to be allergic or unresponsive to penicillin or sulfonamides. Duo-Strep is supplied in sterile, rubber-stoppered vials containing 1 or 5 Gm. of the dry mixture. When stored in dry form in the original unopened container, it is stable at room temperature for four years.

TELEPAQUE, NEW PACKAGE SIZE

Winthrop-Stearns, Inc. has recently announced that hospitals and other large users of the new radiopaque compound Telepaque may now obtain the product, which is supplied in 0.5-Gm. tablets, in bottles of 500.



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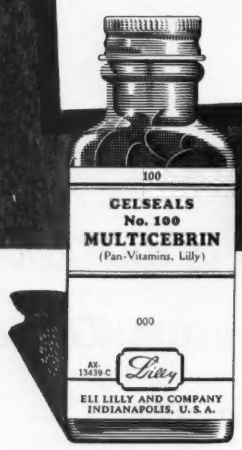

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